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**Pacific
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Region**

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Land and Resource Management Plan

Mt. Baker-Snoqualmie National Forest

LAND AND RESOURCE MANAGEMENT PLAN

Final Environmental Impact Statement
Mt. Baker-Snoqualmie National Forest

PREFACE

This National Forest Land and Resource Management Plan (Forest Plan) guides all natural resource management activities and establishes management standards and guidelines for the Mt. Baker-Snoqualmie National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

The Forest Plan will be reviewed, and updated if necessary, at least every five years. It will be revised on a ten-year cycle, or at least every 15 years.

This Forest Plan replaces previous land and resource management plans for the Mt. Baker-Snoqualmie National Forest, with the exception of the Alpine Lakes Area Land Management Plan and the Skagit Wild and Scenic River Management Plan, which are both incorporated. Upon approval, subsequent activities affecting the Mt. Baker-Snoqualmie National Forest must be in compliance with this Forest Plan. In addition, permits, contracts and other instruments for the use and occupancy of National Forest System land must be in conformance with this Forest Plan.

If any particular provision of this Forest Plan, or the application thereof to any person or circumstances, is found to be invalid, the remainder of the Forest PLan and the application of that provision to other persons or circumstances shall not be affected.

Information regarding this Plan can be obtained from:

Forest Supervisor
Mt. Baker-Snoqualmie National Forest
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TABLE OF CONTENTS

List of Tables

List of Figures

CHAPTER 1 - INTRODUCTION

A. PURPOSE OF THE FOREST PLAN

This Land and Resource Management Plan (Forest Plan) guides all natural resource management activities and establishes management standards and guidelines for the Mt. Baker-Snoqualmie National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

The Forest Plan:

- o establishes Forest-wide multiple-use goals and objectives;
- o establishes Forest-wide standards and guidelines applying to future activities;
- o establishes management area direction, including management area prescriptions and standards and guidelines applying to future management activities in that management area;
- o establishes the allowable sale quantity for timber and identifies land suitable for timber management;
- o establishes monitoring and evaluation requirements;
- o recommends 30 rivers be added to the National Wild and Scenic River System.

The Forest Plan embodies the provisions of the National Forest Management Act of 1976 (NFMA), the implementing regulations, and other guiding documents. Land use determinations, standards and guidelines, and management prescriptions constitute a statement of the Forest Plan's management direction. However, the projected outputs, services, and rates of implementation are estimates and are dependent on the annual budgeting process. See Chapter 5, Budget Proposals for additional detail.

The Forest Plan will ordinarily be revised on a 10-year cycle, or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the Plan have changed significantly or when changes in Resource Planning Act policies, goals, or objectives would have a significant effect on Forest level programs. The Forest supervisor will review the conditions on the land covered by the Plan and the demands of the public at least every 5 years to determine whether either has changed significantly.

B. RELATIONSHIP OF THE FOREST PLAN TO OTHER DOCUMENTS

Relationship to the FEIS and Record of Decision

This Forest Plan sets forth the direction for managing the land and resources of the Mt. Baker-Snoqualmie National Forest. The plan results from extensive analysis and considerations addressed in the accompanying Environmental Impact

Statement (EIS) and Record of Decision (ROD). It is based on Alternative J as presented in the FEIS and in the Record of Decision. Many aspects of the Forest Plan reflect numerous suggestions from the public in response to the Draft Environmental Impact Statement and accompanying Proposed Land and Resource Management Plan. The planning process and the analysis procedures used to develop this Plan are described or referred to in the FEIS. The FEIS also describes and analyzes other alternatives considered in the planning process.

Specific activities and projects will be planned and implemented to carry out the direction in this Plan. The Forest will perform environmental analyses on these projects and activities. This subsequent project-level environmental analysis will use the data and evaluations in the Plan and FEIS as its basis. Environmental analysis of projects will be tiered to FEIS accompanying this Forest Plan.

Relationship to the Regional Guide

The Regional Guide for the Pacific Northwest Region, as amended December 8, 1988, provides direction for National Forest Plans. It includes standards and guidelines addressing the major issues and management concerns considered at the Regional level, to facilitate Forest Planning.

Relationship to Special Area Plans

In recent years, the United States Congress has enacted legislation that affects the management of two areas on the Mt. Baker-Snoqualmie National Forest: Alpine Lakes Management Area and the Skagit Wild and Scenic River.

The regulations (36 CFR 219.2(b)) guiding the development of Forest Plans state that "if in a particular case, special area authorities require the preparation of a separate special area plan, the direction in any such plan may be incorporated without modification." For this reason the Alpine Lakes Area Management Plan and the Skagit Wild and Scenic River Management Plan will be incorporated unchanged in the Forest Plan.

The Alpine Lakes Area Management Plan

The Alpine Lakes Area Management Act of 1976 (PL 94-357) required that a separate plan be developed for the Alpine Lakes Area. This plan and its accompanying Environmental Impact Statement was developed with extensive public involvement, and implemented in early 1982.

The Alpine Lakes area has been managed under the above Plan for approximately eight years. The Forest Plan holds constant the land designations and management as presented in the Alpine Lakes Area Management Plan. Problems which surface will be handled administratively, or when the Forest Plan is revised, in approximately ten years.

Management direction for the Alpine Lakes Management Area will be as set forth in the Alpine Lakes Area Management Plan, Final Environmental Impact Statement and Record of Decision, dated November 2, 1981.

The Skagit Wild and Scenic River Management Plan

The Skagit Wild and Scenic River was designated in 1978 (PL 95-625) and is managed under the 1984 Final River Management Analysis and Plan. This plan was developed with extensive public involvement and implemented in 1984.

The Skagit River area has been managed under the above plan for approximately six years. To date, neither the Forest Service nor the public have identified any major problems with the implementation of the Skagit Wild and Scenic River Management Plan. The Forest Plan holds constant the management direction as presented in the River Management Analysis and Plan. Problems which surface will be handled administratively, or when the Forest Plan is revised, in approximately ten years.

Management direction for the Skagit Wild and Scenic River Management Area will be as set forth in the River Management Plan - Skagit River Record of Decision dated August 8, 1984.

Copies of both the Alpine Lakes Plan and the Skagit River Plan are available for review at the Mt. Baker-Snoqualmie National Forest Supervisor's Office, 1022 First Avenue, Seattle, Washington 98104.

Relationship to Project Planning

This Forest Plan serves as the single land management plan for the Mt. Baker-Snoqualmie National Forest. All other land management plans are replaced by the direction in this plan, including :

Multiple Use Plan, Glacier Ranger District
Multiple Use Plan, Baker River Ranger District
Multiple Use Plan, Darrington Ranger District
Multiple Use Plan, Monte Cristo Ranger District
Multiple Use Plan, Skykomish Ranger District
Multiple Use Plan, North Bend Ranger District
Multiple Use Plan, White River Ranger District
Timber Management Plan, Mt. Baker National Forest
Timber Management Plan, Snoqualmie National Forest
Wilderness Management Plan, Glacier Peak Wilderness
Land Adjustment Plan, Snoqualmie National Forest
Land Adjustment Plan, Mt. Baker National Forest

This Forest Plan document is used primarily by Forest Service field personnel in the planning and implementation of natural resource management activities. Refer to the above discussion regarding project-level planning, environmental analysis required, and tiering to the FEIS.

The management direction provided by this Forest Plan provides the framework within which project planning and activities will take place. The Plan defines management area goals and management standards that guide project activities toward achieving a desired future condition for the management area and, collectively, for the Forest. The Plan specifies a schedule for project activities and management practices. It provides guidance concerning potential projects and project limitations, including assumptions about the appropriate

vegetation management practices for timber sale projects. On-the-ground project analysis verifies the appropriateness of those assumptions.

Within this guidance, projects are developed to most efficiently and effectively accomplish management goals and objectives. All projects will comply with all National Environmental Policy Act (NEPA) requirements.

Project environmental analyses provide an essential source of information for Forest Plan monitoring: new or emerging issues or management concerns may be identified as project environmental analyses are completed; project analyses validate the management direction designed to achieve management area goals; and site-specific data may be used to update or correct data reported in the Forest Plan. All of this information is used, in the monitoring process, to determine when changes should be made in the Forest Plan.

C. PLAN ORGANIZATION

The Forest Plan contains five chapters, a brief references section, a glossary, and appendix material.

Chapter 1 - Introduction: includes a discussion of the purpose of the Plan, its relationship to other planning documents, and describes the planning area.

Chapter 2 - Summary of the Analysis of the Management Situation: summarizes the supply and demand conditions for significant market and non-market goods and services associated with the planning area. The focus is on those that relate to the major issues, concerns, and activities that are addressed in this Plan. Information and research needs identified during the planning process are listed at the end of the chapter.

Chapter 3 - Issues and Concerns: displays how the management plan addresses and responds to major public issues, management concerns, and resource opportunities identified during the planning process.

Chapter 4 - Forest Management Direction: is the heart of the Plan. It includes the management goals, objectives, and standards and guidelines that establish resource and project management direction for the next 10 to 15 years covered by this Plan. Also included is a general discussion of the desired future condition of the Forest in ten years, and - if the Plan were to remain unchanged - for fifty years. Chapter 4 contains the projected resource outputs, activities, and budget necessary to achieve the Forest Plan goals, and brief summaries of how the resource and activities will be managed under the Plan.

Chapter 4 also contains the Forest-wide standards and guidelines and the prescriptions for each Management Area (MA). These apply to all on-the-ground projects. The Forest-wide standards and guidelines generally apply to all areas of the Forest. The MA prescriptions define the types of activities that can occur within each Management Area.

The Forest Plan map (Preferred Alternative- J), published with the FEIS, shows the location of the various management areas discussed in Chapter 4.

Chapter 5 - Implementation of the Forest Plan: contains implementing direction for the Plan and the monitoring and evaluation program. Collectively, these sections explain how management direction will be implemented, how implementation activities will be monitored and evaluated, and how the Plan can be kept current in light of changing conditions and other findings.

The remainder of the Plan contains a list of references, a glossary, and set of appendices - the projected activity schedules, by resource.

D. FOREST DESCRIPTION

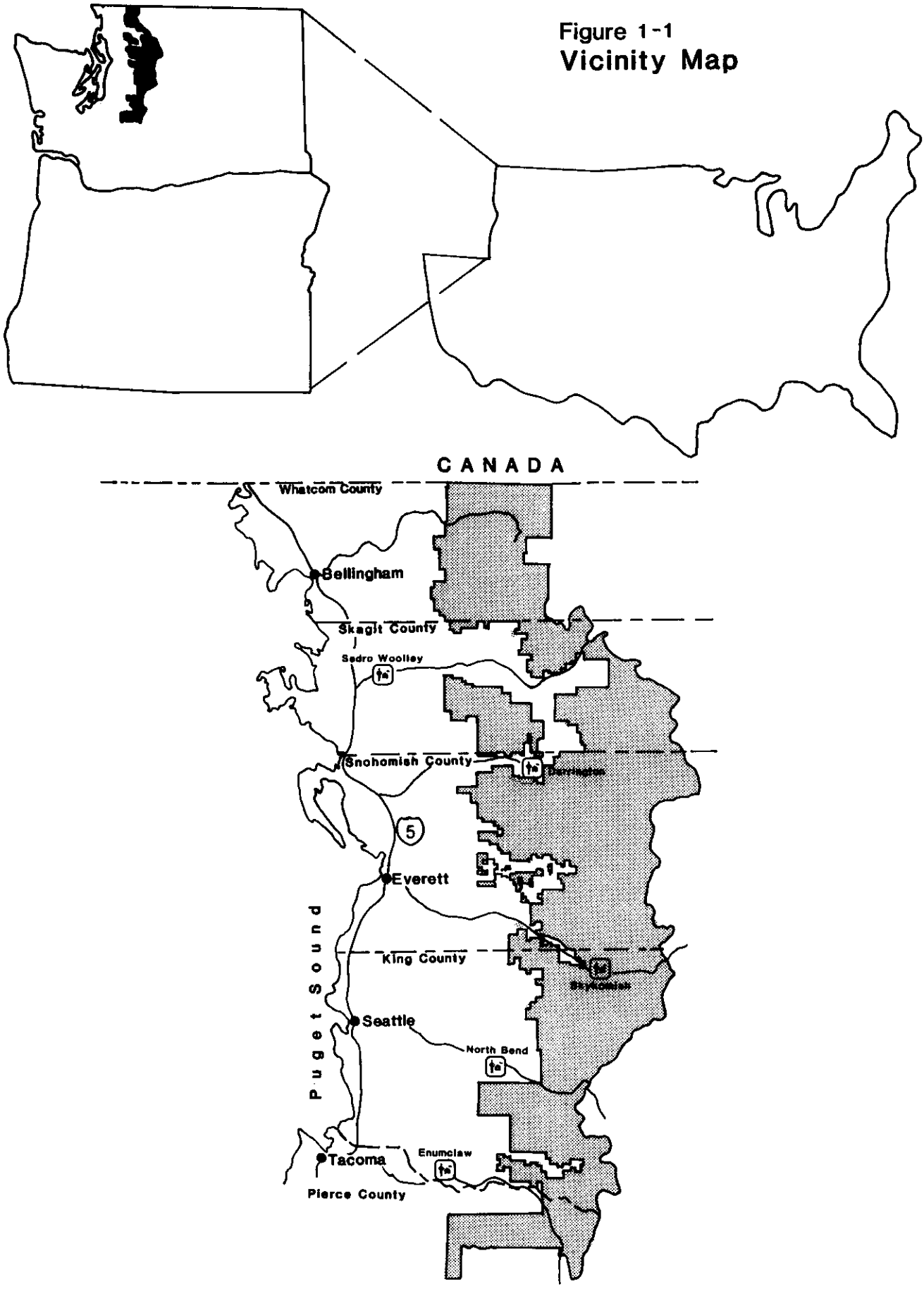
The Mt. Baker-Snoqualmie National Forest contains 1.7 million acres, located in Washington State, on the west side of the Cascade Mountains, within five counties of the Puget Sound area. The Forest includes land from the Canadian border to the northern boundary of Mt. Rainier National Park, and is also adjacent to the North Cascades National Park and the Wenatchee National Forest. Refer to Figure 1-1, the vicinity map on the following page.

Over half of the state's population live in the five-county area, a total of 2.5 million people in 1988. An additional 3.0 million reside in the Vancouver, Canada metropolitan area, just north of the Forest. The Puget Sound economy is quite diverse today, although the aerospace industry is still a major employer (Pascall and others 1989). The metropolitan area is a major center for finance, trade - especially to Pacific Rim nations - administration, and government. The forest products industry has experienced major changes over the last decade; wood products manufacturing outputs have been up the last three years, but with 25 percent fewer employees. In 1986, 47 out of 87 lumber mills in the Puget Sound area (which does not include the 35 export mills) were one-third to 100 percent dependent on National Forest logs for their operations. Nearly all the timber cut from the Mt. Baker-Snoqualmie is consumed in the local area.

The Forest contains some of the nation's most beautiful country, including much of the rugged and glaciated North Cascade Mountains. Annual precipitation near the Cascade Crest is 100-200 inches; above 2,500 feet, most winter precipitation falls as snow. The upper reaches of seven major river systems are located on the Forest and provide both seasonal and year-round spawning and rearing habitat for anadromous and resident fish. There are 18 municipal watersheds on the Forest. The vegetation of the Forest consists of dense stands of western hemlock, Douglas-fir, and western redcedar at lower elevations, blending into Pacific silver fir, mountain hemlock, and true firs at the higher elevations. Above 6,000 feet, the vegetation is composed almost entirely of low growing species. The diversity of plant and tree communities provides a variety of habitats for wildlife species. Four Federally listed threatened and endangered species may occur on the Forest.

The Forest is rich in recreation opportunities and receives over 5 million recreation visits annually. Dispersed day-use recreation is emphasized. There are over 1,380 miles of trails. Hiking, horse use, and motorized recreation, plus alpine skiing at seven ski areas are among the many uses. Nearly 42 percent of the Forest is designated wilderness. Other designated areas include the 158 mile long Skagit Wild and Scenic River System, the Mt. Baker National Recreation Area (8,700 acres), and the multiple use Alpine Lakes management unit (148,000 acres). The diversity of both the physical and social settings adds to the complexity of issues and concerns facing Forest managers.

Figure 1-1
Vicinity Map



CHAPTER 2 - SUMMARY OF THE ANALYSIS OF THE MANAGEMENT SITUATION

A. INTRODUCTION

This chapter summarizes the management situation at the time these plan decisions were made. It focuses on the supply and expected future demand conditions for significant market and non-market goods and services, tied to the major issues and concerns. It also addresses the capability of the Forest to meet (or not meet) those demands. The benchmarks are revisited, to provide information about the the maximum and minimum biological and economic production opportunities of the Forest. Chapters II and III of the FEIS contain additional supply/demand data. The benchmarks are discussed in more detail in Chapter II, FEIS and Appendix B. Also, refer to the Mt. Baker-Snoqualmie National Forest, Analysis of the Management Situation, May 1985.

The last section of this chapter is a list of information and research needs, identified during this extensive planning process.

B. BENCHMARK ANALYSIS

The analysis of the current management situation includes, as part of the requirements of NFMA, a "benchmark" analysis. The benchmarks had several purposes: they helped define the maximum economic and biological resource production opportunities on the Mt. Baker-Snoqualmie; assisted in evaluating compatibilities and conflicts between market and nonmarket objectives; defined the range - or the "decision space" - within which integrated alternatives will be developed; and were used to analyze the implications and opportunity costs of legal and policy constraints.

Benchmarks, like alternatives, were a combination of land capability, management practices, and schedules to achieve certain objectives. The benchmarks were "run" using FORPLAN, a linear computer model; the resource outputs or results were then reported and analyzed. Unlike alternatives, benchmarks are not designed to respond to all the ICO's. In addition, not all of the benchmarks were formulated to meet the management requirements (MR's) of 36 CFR 219.27. By comparing those benchmarks with and without MR's, the opportunity costs of the MR's could be quantified.

Required Benchmarks

There are several benchmarks that were required by the regulations [36 CFR 219.12(e)] and National direction. They include:

Minimum Level. This benchmark specified the minimum level of management which would be needed to maintain the Mt. Baker-Snoqualmie National Forest as part of the National Forest System.

Maximum Present Net Value Based on Established Market Price. This benchmark specified the management of the Forest at a level which will maximize the present net value of those outputs that have an established market price.

Maximum Present Net Value Including Assigned Values. This benchmark specified the management which will maximize the present net value of those outputs that have either an established market price or assigned monetary value (such as dispersed recreation.)

Current Level. This benchmark specified the management of the Mt. Baker-Snoqualmie most likely to be implemented in the future if current direction is followed. This benchmark forms the basis for the "no action" alternative.

Maximum Resource Levels. Each of these benchmarks estimated the maximum capabilities of the Forest to provide a single resource emphasis level. On the Mt. Baker-Snoqualmie, the maximum resource benchmarks included Timber and Primitive and Semi-primitive Nonmotorized Recreation.

Summary of Benchmark Production Potentials

The production potentials determined by the benchmarks are compared with current management direction and Alternative A (No Action), as displayed in the accompanying FEIS, in Table 2-1. Outputs, effects, benefits and costs related to significant issues, concerns, and opportunities (ICO's - see Chapter 3, Forest Plan for more information on ICO's) are displayed for comparison. Benchmarks 1 and 3 did not include the MR's; therefore, they did not meet requirements of NFMA.

Present net value (PNV) is affected most by the discounted costs and benefits of timber activities. The discounted costs and benefits of recreation activities did not vary much between benchmarks. This reflects the rather narrow decision space for potential recreation use and capacity, especially in unroaded.

Table 2-1
Benchmark Outputs and Effects

	Minimum Level	Biological Tmbr Potent. without MR's (Run #1)	Max PNV w/out MR's (Run #3)	Max PNV with MR's (Run #7)	Max Timber with MR's	Max. Primitive Semi-Prim Rec. with MR's	Alt. A (No Act)
Discounted Benefits ($MM)							
Timber	Not	3057 6	2870.6	2189 5	2534.1	1191.1	1806.6
Recreation	Est	1792.9	1790.9	1787.6	1791.7	1761.7	1915.2
Other		not estimated					33.7
TOTAL		4850.5	4661.5	3977.1	4325.8	2953.5	3755 5
Discounted Costs ($MM)							
Timber	Not	1927.4	1719.1	1286.9	1689.9	684.9	1083 0
Roads	Est.	267 3	256 0	253 5	277.5	169.8	168.8
Recreation		33 7	33.7	33 7	33 7	33 5	34.8
Other		not estimated					
TOTAL		2228.3	2008.1	1574 1	2001.1	888.2	1444.2
PNV ($MM)	Not Est.	2599.7	2630.9	2254.0	2302 3	2050 5	2319.8
Budget ($MM)	3 0	25 1	23 4	28.2	33.4	19.0	22.0
Allowable Sale Quant. (MMCF)							
Decade 1	No Timber	68.4	63 9	37.5	57 2	26.7	31.0
Decade 2	Management	68.4	63 9	37 5	57 2	26.7	36.7
Decade 3	Activities	68.4	63.9	37.5	57.2	26.7	39.0
Decade 4		68.4	63.9	37.5	57.2	26.7	39.0
Decade 5		68.4	63.9	37.5	57.2	26.7	39.0
Long Term Sustained Yield Capacity (MMCF)	N/A	72 6	66 2	37 5	62.9	27.8	39.0
Acres Suitable for Timber Harvest Acres)	N/A	606.9	606 9	463.8	529 7	300.9	412.5
Recreation Use (MRVD/Year)							
Roaded	829	2177	2177	2177	2177	2099	2060
Unroaded	100	203	203	211	209	240	201
Wildlife Pop Levels 1/							
Bald Eagle (Pairs)	4	4	4	4	4	4	4
Elk (Summer Range Pop.)	Not Est	1080	1080	1080	1080	1080	1240
Deer (Summer Range Pop.)	Not Est	19660	19660	19660	19660	19660	19750

1/ Bald eagle numbers are derived from recovery plan population objectives for pairs in breeding territories. Deer and elk values are population estimates based on maximum habitat potential for each range type.

Discounted recreation benefits for Alternative A are higher than in any benchmark, but PNV is less than all the benchmarks except Max Recreation. The combination of MR constraints and allocation of tentatively suitable acres to other resource benefits in Alternative A (no such allocations were made in benchmarks), reduced the timber outputs in Alternative A and, thus, PNV.

The decision space for harvest levels that included MR's ranged from 57.2 MMCF (the Max Timber benchmark), to 26.7 MMCF (the Max Recreation benchmark). Alternative A harvest level falls in the lower portion of this benchmark decision space. Due to MR's and existing land use constraints (including Congressional designations), the practical upper limit for timber outputs was approximately 38 MMCF (Benchmark #7).

Long-term sustained yield capacity (LTSYC) was not reached until after Decade 5 in the benchmarks.

C. RESOURCE DEMAND PROJECTIONS

This section includes additional demand projections for selected resources. Some outputs and activities, while included in the RPA targets and reported in the output tables in the FEIS, do not have a true demand-supply relationship, and are not discussed here (such as precommercial thinning and road construction).

Demand is generally defined as the quantity of a good or service demanded at a certain price. A substantial change in price can result in a far different quantity demanded. This definition is appropriate for market commodities with a price (or user fee), such as timber and developed recreation.

Demand for non-market goods and services, such as wilderness and wildlife resources or facilities, do not fit the general definition. Although recreation costs are incurred by the visitor, the outdoor recreation resource or facility is generally available at zero or nominal charge. The thousands of days of outdoor recreation currently being consumed are those demanded at the prevailing zero or near zero-prices for these resources. If prices were raised substantially, a different quantity would be demanded or consumed.

As used in this section of the document, "demand" is used to identify a particular point or instant on a demand schedule. As such, it reflects an intersection at a particular point in time between a demand schedule (a list of willingness-to-pay values for various levels of offerings) and a supply schedule (a list of volumes the seller is willing to offer at various prices).

Recreation Demand

Recreation demand was projected using regression analysis. This form of analysis uses historical trends and expected population growth to predict future recreation use. Demand is expressed as a range (±10% from the absolute figures developed in the analysis process) due to the uncertainty of projecting recreation demand so far into the future.

Currently, the demand for developed recreation (which is primarily alpine skiing and developed campgrounds) is well below the Forest capacity. Alpine ski areas currently have more than enough capacity, and are now expanding to meet a market demand for a higher quality skiing experience. Developed campgrounds are operating well below capacity except for selected summer weekends, and in certain geographic areas.

Current capacity for roaded dispersed recreation far exceeds the current demand. Future capacity will be able to accommodate expected demands on the Forest until the fourth decade, when population growth begins to affect all recreation sectors.

Unroaded dispersed recreation use currently exceeds the capacity of the Forest. The result, at present, is a reduction in the quality of the local experience, or a displacement to another location to satisfy current demand. With future population growth, this situation will not improve.

Wilderness on this Forest is nearing its practical capacity, due in large part, to its proximity to the Puget Sound metropolitan area. By the second decade, projected demand will have exceeded capacity.

Table 2-2
Summary of Projected Supply and Anticipated Demand

	Decade 1	Decade 2	Decade 5
Recreation			
Developed Recreation Use (MRVD/Year)			
Projected Supply (Capacity)			
Alternative A (No Action)	5,382	5,792	6,842
Forest Plan	5,598	6,098	7,238
Anticipated Demand 1/	2,834-3,464	3,848-4,702	6,718-8,210
Dispersed Recreation Use (Non-wilderness) Including Wildlife and Fish Use (MRVD/Year)			
Projected Supply (Capacity)			
Alternative A (No Action)	4,092	4,482	5,142
Maximum Recreation Benchmark 2/	7,458	7,468	7,481
Forest Plan	4,030	4,487	4,751
Anticipated Demand	2,539-3,121	3,774-4,708	6,589-8,072
Roaded Recreation Use (MRVD/Year)			
Projected Supply (Capacity)			
Alternative A (No Action)	3,343	4,097	4,902
Maximum Recreation Benchmark	7,219	7,231	7,248
Forest Plan	3,277	3,730	3,991
Anticipated Demand	1,854-2,266	2,837-3,467	4,817-5,887
Unroaded Recreation Use (MRVD/Year)			
Projected Supply (Capacity)			
Alternative A (No Action)	201	164	115
Maximum Recreation Benchmark	239	237	233
Forest Plan	208	182	149
Anticipated Demand	225-293	382-492	713-890
Timber			
Allowable Timber Sale Quantity (MMCF/Year)			
Projected Supply			
Alternative A (No Action)	31 0	36 7	39.0
Maximum Timber Benchmark	68 4	68 4	68.4
Forest Plan	22.4	25.7	29.7
Anticipated Demand 3/	22 4	25 7	29.7

1/ Anticipated recreation demand is based on historical use figures projected into the future and Puget Sound population projections

2/ FORPLAN Alternative runs (1989) have undergone changes in recreation modeling since the Benchmarks were run (Mar 85) to better reflect the spatial characteristics of the recreation opportunity spectrum (ROS) from a per acre to a per area basis.

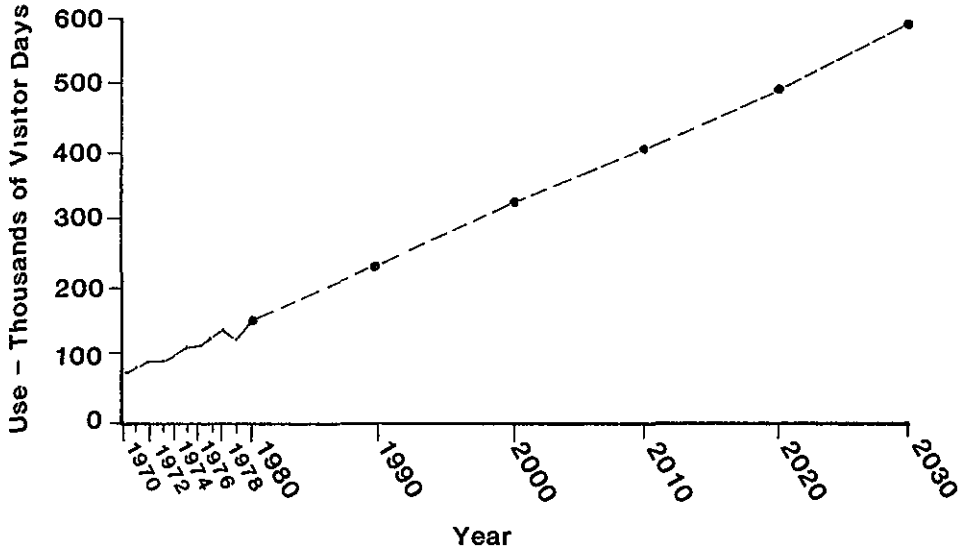
3/ Projections indiate that demand for timber from the MBS will remain sufficiently high to allow the Forest to sell all the timber it can produce from lands allowing harvest, with no downward effect on prices

Wildlife Demand

The demand for wildlife takes the form of hunting, wildlife study, viewing, and photography. Figure 2-1 shows past and projected demand for all types of hunting on the Forest.

Hunting, especially for big game, has been a dominant demand on the wildlife resource for the past 20 years. During recent years, non-consumptive use has accounted for a larger percent of the total wildlife-related demand. Estimates indicate that non-consumptive use exceeds consumptive use by about 33 percent on all lands and is growing at a faster rate (USDA 1980). The projections shown below are based on land area to support a given density of hunters, rather than the availability of animals to hunt. Future demand may be lower than indicated below if hunter success decreases drastically as a result of reaching the carrying capacity for hunted animals. Because of the large population growth in the Puget Sound area, the demand for non-consumptive fish and wildlife use will continue to increase at a fast rate.

Figure 2-1
Hunting Use
(All Types)



Demand for Fish

The demand for anadromous fish is twofold: commercial (non-treaty commercial ocean fishing and American Indian commercial harvest) and sport. The current demand for commercially caught fish is assumed to equal the current annual harvest (USDA and State of Washington 1981-85).

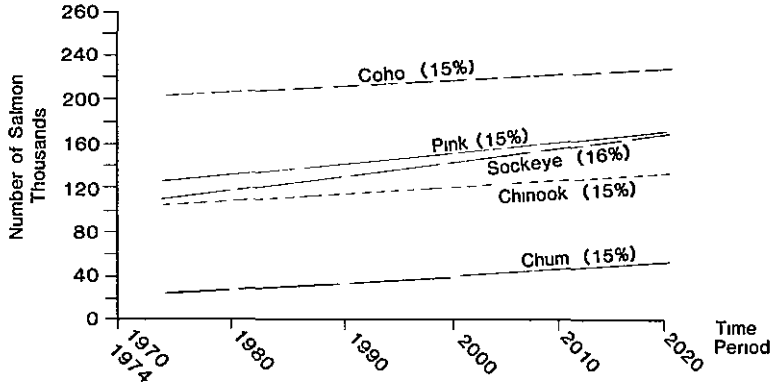
This estimate of demand is conservative. There are more commercial fishermen in the industry than there are fish. If more fish were produced, they could be harvested with little additional cost. Therefore, actual demand at current prices is probably higher than shown.

The National demand for edible fishery products increased 52 percent from 1967 to 1976. This increase was a result of a growing population and an increased per capita consumption rate. This increase is projected to continue nationally and worldwide (USDA 1980).

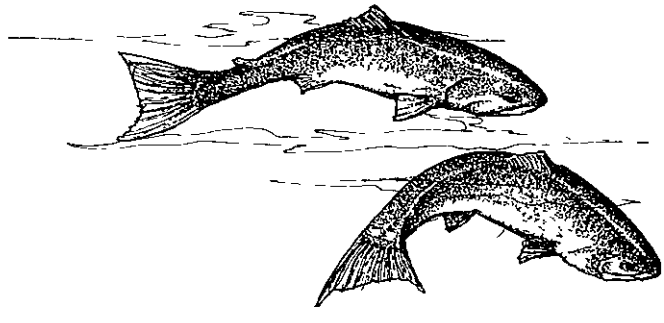
Figure 2-2 shows the estimated demand for salmon produced from all ownerships in the Statewide Comprehensive Plan's Area 1; this includes most of the western half of the state, north of the Cowlitz River and including all of the Olympic Peninsula. It is assumed that the projected increase in demand for fish produced on the Forest will be similar to that for Area 1, though the actual number of fish produced on the Forest is much smaller.

Figure 2-2

Demand For Salmon Produced in Area 1



The numbers in (%) is the percentage increase in demand of each species from period 1970 to 2000



Most of the salmon sport fishing in the Puget Sound area occurs in salt water. There is little salmon fishing on rivers and streams; exceptions include a small salmon sport fishery on the Nooksack and Skagit Rivers. There is also some incidental harvesting of salmon during the sea-run trout sport fishery.

Sea-run trout sport fishing occurs almost entirely in the stream and river systems. Steelhead, sea-run cutthroat, and Dolly Varden are caught almost exclusively in freshwater systems. The freshwater sport fishing demand for sea-run and resident fish produced on the Forest has steadily increased since the early 1970's. Projections indicate that this demand, measured in angler days, will increase by 25 percent by the year 2000. The demand for saltwater sport fishing for all anadromous fish produced on the Forest is likely to increase 25-50 percent over present demand.

Sport fishing demands are conservative. The Puget Sound region has more recreational sport fishermen than desirable fish. If more desirable sport fish were produced, they could be absorbed by the recreational sport fishery.

Timber Demand

The following is a brief summary of the timber demand discussion found in Chapter III of the FEIS.

Demand for lumber and wood products from the Puget Sound Economic Area followed the trends of the Pacific Northwest, with a drastic decline in the early 1980's compared to the highs during the 1970's. Production of wood products in the period 1980-84 was slightly less than 80 percent of that experienced during the 1970's. The structure of the wood products industry in the Puget Sound Area put it at a competitive disadvantage with imports from Canada and Southern U.S. production.

The pulp and paper industry avoided the deep declines in demand and production of the early 1980's. Strong demand for paper, domestically and abroad, helped pull that sector of the wood products industry through the recession in fairly good shape. Over the past decade, the number of pulp and paper mills in the Puget Sound area has dropped by almost 20%, but the installed capacity of the remaining mills has increased by about 10%. This is similar to the structural changes found in other sectors of the industry. As of 1986, about 5% of the Forest's annual harvest went to Puget Sound area pulp mills, which represented about 7% of the mills' roundwood consumption. Regionally, roundwood consumption represents only about 30% of the total fiber input for pulp production.

The restructuring of the timber industry in the Northwest during the early 1980's was a response to the declining market share and an attempt to regain market share. The projected future decline in production from Canada and a continuing growth in exports to the Pacific Rim Countries are likely to result in a shift in demand for Puget Sound Economic Area logs. The timing and magnitude of this shift in demand, however, are speculative. Increased production from Puget Sound Area mills during the past three years is an indication that the industry is improving the efficiency of its wood processing and thus improving its ability to compete for market share nationally and internationally.

The supply/demand situation in other economic areas around the state also influences the availability of timber in the Puget Sound area. The Puget Sound area mills (including export facilities) consume more logs than are harvested in the area. During the 1980's, approximately 66 percent of the logs consumed in Puget Sound originated from Puget Sound; approximately 26 percent came from the Olympic Peninsula; 5 percent from Central Washington; and 3 percent from other areas, including out of State. A similar pattern of imports into the area occurred during the 1970's.

While the Puget Sound area has historically imported approximately 35% of the logs needed for its mills, it has used about 95% of the wood harvested in the are within the region. Only about 5% of the harvest from the Puget Sound area is going to processing elsewhere. (Exporting logs overseas is considered part of the local processing industry.) So the Puget Sound area is a net importer of logs, which come from other parts of Western Washington, along with a minor amount from the east side of the Cascades.

Depending on markets, mill capacity, price and local harvest level fluctuations, one part of the State may have a greater demand for logs at any given time than another. The relative demand for logs among processing areas may change seasonally, or from year to year. Prices in the areas with a greater need for logs will tend to float upward, drawing more supply to that area. As that need is met and prices stabilize, a shift may occur to another region. Prices serve as the leveling agent to direct the log supply to the areas with greatest demand. In extreme cases, prices may not be able to go high enough to bring in the needed lumber and a structural shortage of logs may develop for an area. If that continues for any length of time, mills in that area will be faced with closure. Competitive mills will tend to survive such periods, but marginally efficient mills may drop out. The changing of prices to moderate log flows have to operate within limits, which are set primarily by the prices of finished wood products in the regional market.

Because of the local and regional interactions in the roundwood markets, it is difficult to make quantitative estimates of future demand for logs from the Puget Sound area. One can not really assume that the consumption by the Puget Sound mills is a measure of the demand for Puget Sound logs, when other regions may assert a need, as reflected through relative prices, for those logs as well. However, estimates of relative levels and trends in demand for timber can be made, given what is known about current consumption patterns, expected changes in regional, national and international demand for wood products, and projected physical/biological supply.

For the next 20 years, demand for wood products is expected to grow, but slowly. This is based on a continuing, though not rapidly expanding, need for wood for new construction and for remodeling and repair. Export markets will decline somewhat over that time period, but will still remain very active. Canadian wood imports will continue to decline from the high levels they held in the early 1980's because of decreased competitiveness and increasing restrictions on logging in Canada. In all, given no economic shocks, the demand for roundwood will stay at least at current, to somewhat higher, levels.

In the face of this demand, available inventory from private industrial forest lands will be declining, as will harvests from National Forest lands, particularly in Northwestern Washington. Other private land harvests may come up somewhat, but probably not enough to offset the declines in these two ownerships. And after the mid-1990's, almost all old growth timber that is still harvested will come from National Forest lands. Therefore, it appears the next 20 years will find fairly tight physical/biological supplies juxtaposed with demand that stays at least at current levels. The expected result will be fairly rapidly rising prices in the range of 1.5 to 4 percent per year (Adams, 1989), but no timber supply "crisis," as prices play a moderating effect - eliciting more supply from the private nonindustrial forest lands, and dampening final demand for wood products by consumers because of increased cost.

The declining inventory of sawtimber of harvestable age in the next two decades will have less effect on the pulp and paper sector than on the lumber and plywood sectors. Pulp mills can use much smaller material, chipped either in the woods or at the mill, than can sawmills. Thus, the age-class gap in the inventory will not be as limiting for pulpwood supply. Other economic factors, though, may combine to place an increasing squeeze on pulp prices. Better log utilization and on-site use of residues by the primary manufacturers leaves less low-cost residue available for pulp. Declining harvests regionwide and in western Canada will also reduce residues available. If the export demand for chips remains strong, additional pressure will be placed on prices.

Over the next decade or two, these supply and demand factors may put the Northwest pulp producers at a greater cost disadvantage than East Coast or Southeast producers, who already produce the major portion of pulp and paper products in the country. Mitigating factors for the industry are likely to be continued technological changes, allowing more use of species little utilized to date, and greater use of recycled paper as feedstock. Supply changes from the Mt. Baker-Snoqualmie National Forest are expected to have little effect on the local area or regional pulp and paper sectors.

D. INFORMATION NEEDS

This section lists the information, inventory and research needs that have been identified during the planning process for the Mt. Baker-Snoqualmie National Forest. Information needs form the foundation for ongoing efforts by the research and planning communities (U.S. Forest Service Pacific Northwest Research Station, Pacific Northwest Region of the Forest Service, and the Mt. Baker-Snoqualmie National Forest) to identify management needs, and to build and implement the information and research programs necessary to support plan accomplishments. The concept used to organize and develop these needs recognizes that biological, physical and social ecosystems are the foundation for the planning process.

The remainder of this chapter is devoted to listing research, inventory and data needs identified during the planning process.

Recreation

1. Recreation use database to be brought up to date and should reflect accurate levels of use based on measurement rather than estimates. This should be tied to ROS.

2. A uniform method for determining and applying demand for various forms of recreation with ties to ROS needs to be developed.

3. Update Forest Existing Visual Condition mapping in the Forest Data Base every 5 years.

4. Review and update closure orders every 5 years.

5. Collect baseline vegetation and soil information using permanent transects in camps, trails, and other areas that currently appear to be well within acceptable standards but have potential for future degradation.

6. Complete Vegetation Management Plans for all developed recreation sites.

7. Develop Forest-wide inventory of sensitivity levels for trails, roads, and wild and scenic rivers.

Human Community

1. Prior to the update of the Forest Plan (in 10 to 15 years), complete an economic-base analysis (or the equivalent) for certain towns, including any or all of the following: Darrington, Granite Falls, Skykomish, and Enumclaw. Others may be studied if deemed necessary.

American Indian Religious and Cultural Uses

1. Work with Tribes and religious practitioners to update the inventory of religious use areas and predict future use trends.

2. Consult with Tribes and religious practitioners on specific projects and to develop more effective mitigation measures through consultation.

3. Examine integrated resource inventory to determine location and volume of old-growth cedar stands.

Archaeological and Historical Properties

1. Complete inventory of reported cultural resource sites. Use thematic or district approach. Conduct evaluations of National Register eligibility within this context.

2. Develop new techniques to identify prehistoric cultural resources. Take advantage of ground disturbance (road construction, timber harvest, trail use etc.) to discover new sites. Investigate new site discovery techniques (subsurface probing, soils testing, etc.) to identify previously unidentified sites. Use this new information to understand distribution of sites across the landscape and more effectively plan future surveys.

3. Develop cultural resource field sampling survey strategy based on Forest overview and land type analysis. Refine the strategy based on results of information needs of the above.

4. Identify how the Forest cultural resources can best contribute to general knowledge of prehistory and history. Coordinate with State and regional efforts to establish appropriate research goals.

5. Identify cultural resources best suited to interpretation. Consider accessibility and representation of major historic themes. As a start, improve interpretive information at the Public Service Centers, the Joint Information Center, and other public contact points.

6. Expand efforts to repair and rehabilitate historic resources listed on the National Register of Historic Places.

Wilderness

1. Verify and refine the limits of acceptable change through monitoring. Especially, need to refine data on social impacts in the wilderness, such as what are the "real" implications of encounters and camps visible, to wilderness use levels and experiences.

2. Develop and maintain a database on wilderness use and impacts. Inventory wilderness campsites.

3. Further research is needed on what the appropriate level of outfitter-guide use should be in the wilderness.

4. Locate and define the wilderness boundary on the ground for both wilderness and other management activities outside of wilderness.

5. Collect vegetation, soil condition, and impact trend information in heavily-used camp areas near trails and other heavy-use areas (such as stock-hitching areas) that appear to be near the limit of acceptable change.

6. Identify air quality related values that would be potentially impacted by changes in air quality in Class I areas.

Air Quality

1. Complete inventories of baseline conditions for visibility, water chemistry, vegetation vigor, aquatic habitats and other identified air quality related values.

Wildlife

1. Complete bald eagle roosting, foraging and nesting habitat inventory and monitor these and other potential use sites. Validate the effectiveness of standards and guidelines for bald eagle habitat areas, and determine the need for changes or additional mitigation measures.

2. Delineate active and potential bald eagle nest sites in accordance with the recovery plan, and develop a management plan for these areas.

3. Determine the significance of recreational activities impacts on bald eagles feeding on salmon carcasses on the Skagit River, and any other area where both activities occur. Determine the best way to manage both resources.

4. Complete peregrine falcon nesting habitat survey and map potential habitat on the Forest. Determine whether there is any reproduction occurring on the Forest. Survey periodically for any nesting use.

5. Determine whether there are resident populations of gray wolves and whether breeding is occurring on the Forest. Develop inventory procedures which are reliable and cost-effective. While bald eagle inventory methods are currently reliable and relatively efficient, methods of inventorying for grizzly bear or gray wolf numbers are lacking. We do not currently have a good idea of how many individuals of these species are using the Forest, how they use the habitat, or whether they are successfully reproducing.

6. Determine whether there are resident grizzly bears on the Forest and whether they are breeding. Examine the effects of recreational uses, road traffic and other activities on any such bears. The U.S.D.I. Fish and Wildlife Service will be making a decision as to whether or not the North Cascades area will be a recovery zone. There is a need to develop information and educational means of teaching the public how to recreate and work safely in the presence of black bears, and potential presence of grizzly bears.

7. Determine baseline numbers for populations of bald eagles, gray wolves, peregrine falcons and grizzly bears.

8. Define potential habitat and habitat types on the Forest for grizzly bear and gray wolf. Determine what would constitute viable populations of these species.

9. Determine how to maintain and create usable dead and defective tree habitat (standing and down) in timber harvest units, while meeting State logging safety requirements. Determine whether created snags provide useful habitat, and how long it takes for them to do so.

10. Inventory current conditions for dead and defective, standing and down, tree habitat.

11. Inventory pileated woodpecker, pine marten and spotted owl populations.

12. Develop more accurate baseline inventories for deer, elk, goats, cavity excavators, and sensitive species.

13. Develop reliable and cost-effective techniques for inventorying indicator species and sensitive species.

14. Refine deer and elk winter, summer, and transition range habitat inventories, and identify critical wintering areas, fawning and calving areas, and migration and travel corridors.

15. The FSEIS and U.S.D.I. (1988) list a large number of information needs for the spotted owl. Refer to these documents. Needs described therein include defining habitat size, dispersal, reproductive, and feeding requirements, year-round habitat needs and information on mortality and survival of adults and young.

16. Validate wildlife ecological indicator species and identify the need for changes in species used. Validate MR habitat requirements for these species, and identify any need for changes in the MR habitat requirements.

17. Validate the critical nature of optimal thermal cover to maintain MR populations of mountain goats and desired levels of deer and elk.

18. Determine the effects of vehicular traffic on roads on species other than elk, which have been well-researched. Determine acceptable threshold levels of road densities for species sensitive to road disturbance. Validate road densities allowed in deer and elk winter range and goat MR areas, and determine whether there is a need to change the allowed density.

19. Determine habitat requirements of, and develop management guides for,sensitive animal species.

20. Determine the effects of forest fragmentation of habitat on wildlife species, particularly those which use mature and old growth habitats. Validate minimum block sizes for habitat pieces. Identify needs and requirements for connecting habitat between blocks of older forest habitats and develop methods for achieving these needs.

21. Revise and improve models for deer and elk habitat capability. Refine coefficients used for various habitat stages. Develop a nonlinear model which fully reflects needs for a balance of optimal cover and forage.

22. Complete and improve mountain goat inventory and goat habitat inventory. Identify critical habitats, and needs for revisions or additions to MR habitat areas. Identify kidding areas, and areas needing protection from human disturbance. Information is needed on the numbers of humans in critical goat habitat areas and the effects of their presence on goat--stress, avoidance, reproductive failure.

Continue to investigate, with the Washington Department of Wildlife, causes for the apparent decline in goat populations and current levels below calculated habitat capability. Areas to be further examined include the effects of parasites, genetic problems from small herd numbers, over-harvesting (legal and illegal hunting) and harassment from human recreational and other activities. Determine the need for additional mitigation measures for goat habitats.

23. Establish, with the State, population objectives for deer, elk and goats on the Forest. Currently, the Forest's shares of statewide species population objectives have not been established.

24. There is a need for a complete inventory of cave and cave-like habitats on the Forest. An extensive (rather than intensive) inventory of these sites was completed by Perkins (1988) under contract with the Forest Service. Inventories of use of these sites by sensitive bat species need to be continued.

25. Talus and cliff habitats on the Forest need to be inventoried and mapped.

26. There is a great need for information, and improved methods for measuring the use of, and demand for, appreciative and consumptive uses of wildlife. Current measures of WFUDS are probably inaccurate and underestimate appreciative (nonconsumptive) uses. There is the same need to improve the methods for, and accuracy of, valuing the economic benefits of wildlife uses on the Forest. In addition, other measures, such as what is called "existence value" of Forest wildlife resources needs to be measured. In short, there is a great need for accurate measures of the importance and values of the Forest's wildlife to the public.

Fish-Water-Riparian

1. Complete and update stream surveys for all fish bearing streams, to include an assessment for presence of fish migration barriers posed by natural and man-caused events.

2. Inventory all fish bearing streams for distribution and volume of large woody debris.

3. Determine the amount and composition of streamside vegetation required for bank and channel stability and its influence on fish habitat capability.

4. Determine what deviations, due to forest management activities, from the existing riparian vegetation types identified as critical riparian vegetation are acceptable for maintaining bank stability and fish habitat capability.

5. Determine what percentage of loss (of the previously established riparian area vegetation) within a project area has resulted in a reduction in the habitat capability to support wildlife dependant species (over a 5 year period).

6. Determine what deviations in baseline flow (high and low periods), resulting from forest management activities, impact fish populations, and/or fish habitat within, and downstream of the project areas.

7. Develop and maintain a data base on Forest lake surveys and fish stocking.

8. Validate the parameters that comprise the Anadromous Fish Habitat Capability Index. Correlate habitat capability parameters to fish use and abundance (numbers of smolts and pounds of fish).

9. Develop forest-wide values for estimating the number of fish that could be produced by implementing habitat improvements (structural and non-structural types). Use actual improvement sites and fish populations present to make these evaluations.

10. Inventory and map riparian areas (to include wetland areas) during project design; develop forest wide data base for this information/data.

11. Stream classification designations will require re-evaluation and possible reclassifications based on new information and additional data.

12. Validate the amounts of area identified in the forest plan's FORPLAN model as riparian acres (streamside class I, II, and III class streams). Also determine if the conceptual modeling of 25% non-harvest, 50% extended rotation yield, and 25% normal rotation is being accomplished and meeting other riparian resource objectives on the ground.

13. Determine what bird, mammal, reptile and amphibian species are dependant on riparian habitat, and what the necessary components of their habitat are.

14. Identify plant indicator species for riparian habitats.

15. Determine the effectiveness of all the stated mitigation measures addressing effects (direct, indirect and cumulative) on fish and water. If ineffective, determine what additional measures will be required.

16. Determine the extent of the transient snow zone and it probability of occurrence of rate of water delivery to soil during rain-on-snow conditions.

17. Determine the effects of different types of forest cover (new clearcut, mature forest, 15-year-old unthinned plantation, etc.) on rate of water delivery to soil during rain-on-snow conditions.

18. Determine under what site conditions forest roads collect and redirect subsurface water.

19. Determine the relative importance of sediment from valley glaciolacustrine deposits reworked by major streams and from Type 4 and 5 streams (as classified in Washington Forest Practices Rules and Regulations) in adversely affecting spawning gravels of anadromous fish.

20. Identify riparian wildlife indicator species.

21. Validate adequacy of riparian standards and guidelines for meeting riparian wildlife habitat needs. Determine effectiveness of riparian mitigation measures for wildlife, and whether additional measures will be required.

22. Determine appropriate widths of riparian travel corridors for wildlife. Determine needs for corridors connecting riparian habitats with upland habitats.

23. Develop improved understanding of seeps, bogs, wet meadows, forested wetlands, marshes, springs and other wetlands, and how they are impacted by project work. Validate the effectiveness of riparian standards and guidelines and mitigation measures in protecting these areas. Develop guidelines for addressing very small wetlands which occur interspersed with forested, suitable timberlands, where they are sometimes difficult to manage.

Sensitive Plants and Vegetative Diversity

1. Identify plant indicator species for riparian, special and unique communities.

2. Inventory entire Forest for threatened, endangered and sensitive plant species, with emphasis on all proposed project areas, RNA's, botanical Areas, wilderness and other areas where timber harvest is not emphasized. Determine management standards and guidelines needed for maintaining species viability, and develop management guides incorporating them. The new Sulphur Creek Botanical Area is a high priority for inventory.

3. Identify tree species whose gene pools are shrinking and develop plans to ensure that they continue to exist on the Forest in their natural range. Some of these species have special medicinal, religious or cultural uses. Identify potential cedar preserves.

4 Inventory the distribution, abundance and habitat requirements of forest plant products, other than trees, collected for commercial uses. These include mushrooms, salal, beargrass, mosses, ferns and other plants, and collection of seed. Determine the effects of harvesting these species, and need for, and means of regulating or restricting collection.

5. Information is needed on the role of the fungal flora in the ecosystems, and how to manage to preserve these elements--their viability, diversity and distributions. The role of fungi in maintaining forested ecosystems needs to be much better understood.

6. Identify future potential Botanical Areas and Research Natural Areas.

7. Determine the effects of using non-native, but already present, plant species for revegetating and stabilizing sites and for forage enhancement. Determine the appropriateness of using these species, and whether there is a need to restrict seeding to only native species.

8. Identify plant zones other than old growth which may need large, viable examples preserved in order to maintain species and community viability through time.

9. Determine prescriptions for reforesting timber harvest units, and subsequent timber management to maintain a diversity of tree species in these areas.

10. Identify effects of fragmentation on plant communities--their viability, diversity and composition.

11. Continue to inventory horizontal and vertical structural diversity of forest stands, to better understand structural differences among age classes, and to identify structural management goals for experimental silvicultural management, to produce desired stand structural components.

12. Complete a Forest inventory of mature and old growth forest communities which includes information on species composition, structure, and other ecological components. A new, more complete inventory of this type was begun in 1990.

Timber

1. Determine what portion of the Mountain Hemlock Area (Management Area 19) can be reclassified as tentatively suitable for timber production.

2. Reinventory the timber resource. Stratify forest land by productive potential and other significant characteristics.

3. Inventory old growth forest land to determine area and location.

4. Develop managed yield tables to project timber growth and yield in forest stands that are predominately true fir, western hemlock, or mountain hemlock species.

5. Determine effects of logging damage on true firs and hemlock and whether or not to plan commercial thinning in these species.

6. Validate areas of J-8 and S-8 suitability classification on the ground.

7. Complete inventory of riparian habitat on the Forest.

8. Conduct provenance testing of Pacific silver fir to determine the genetic variability of this species.

CHAPTER 3 - PLAN

RESPONSIVENESS TO ISSUES, CONCERNS, AND OPPORTUNITIES

This chapter is included to describe how this Forest Plan responds to the major issues, concerns, and opportunities identified during the planning process. The major ICO's and their development are discussed in detail in Chapter I, and Appendix A of the FEIS accompanying this Plan. The reader is encouraged to review those sections.

The major issues, concerns, and opportunities are:

- Development versus Nondevelopment of the Forest
- Timber Supply
- Old Growth Ecosystems and Fish, Wildlife, and Plant Diversity
- American Indian Religious and Cultural Use
- Recreation Opportunities
- Wild and Scenic Rivers
- Management of Municipal Watersheds
- Effects of Timber Management and Related Activities
- Adjacent and Intermingled Lands

Implementation of this Plan will result in rather subtle changes during the first 10 to 15 years (the planning period). The forest visitor will not observe drastic changes from the way the Forest is currently being managed; however, the issues and concerns have focused attention on past forest management practices. These practices have been reviewed and revised, as indicated on the following pages, to address the ICO's.

OVERALL EMPHASIS OF THE FOREST PLAN

The Land and Resource Management Plan reflects the importance of the Mt. Baker-Snoqualmie National Forest as a vital and major contributor of recreation opportunities, plant and animal diversity, and forest goods and services to the Puget Sound region, the Pacific Northwest, and the nation. The Plan recognizes the interrelationships of the many and varied resources of the Forest. It attempts to carefully balance the importance of the nonmarket resources such as dispersed recreation opportunities, scenic quality, fish, wildlife, water, and air quality with the continued use of the Forest to produce sustained yields of timber. As choices were made among individual resources, the tradeoffs and compromises between nonmarket values and market values were given careful consideration.

The Forest Plan emphasizes unroaded recreation; protection of scenery along major highway corridors; increased big game populations; an increase in the Wild and Scenic Rivers System; high quality water; and stable supplies of wood fiber. The Plan maintains roadless areas; provides wildlife habitat for game and nongame wildlife species to maintain viable populations; and provides for increased trail development.

Chapter 3

PLAN RESPONSIVENESS TO THE ICO'S

Development versus Nondevelopment of the Forest

How should the released, unroaded areas be allocated and how will the resources be managed?

At what rate should the Forest Service enter those roadless areas that are allocated for development?

Background: There are approximately 403,000 acres of undeveloped, unroaded lands that were released from wilderness consideration by the Washington State Wilderness Act of 1984. Until the Forest Plan is revised, either at the 10-15 year update or during any earlier revisions, these acres are available for a full range of resource uses. The allocation and management of these acres continues to be a highly controversial issue. The areas contain a vide variety of resource values.

Response: In this Forest Plan, 309,214 acres (77 percent of the "released" acres) are maintained in a roadless character. The remaining 93,716 acres (23 percent) are allocated to various levels of development involving road construction and production of both market and nonmarket outputs.

The total Forest acres assigned to nondevelopment land allocations including wilderness, wildlife habitat areas, dispersed recreation areas, and research natural areas are about 1,132,000 acres or 66 percent of the entire Forest.

Management of the roadless areas on the Forest will proceed according to their land use allocations. Approximately 20,000 acres of the 94,000 acres of roadless area allocated to development will be affected by development (including timber sales) in the next 10 years and no longer meet the definition of roadless as used in RARE II. By the end of fifteen years, an additional 12,000 acres of roadless areas will be affected by development. Proposed development activities scheduled for roadless areas will receive appropriate environmental analysis and documentation before they are implemented.

Table 3-1 shows the general assignment of the unroaded areas, by parcel. This table refers to the acres allocated to development or nondevelopment prescriptions; the acres shown are those ultimately remaining either undeveloped or developed. Refer to Appendix C, FEIS, for more information.

Table 3-1
Roadless Area Disposition - Acres

Area	Developed	Undeveloped
Mt. Baker (Canyon Creek)	2,976	22,070
Mt. Baker (North Block)	5,612	10,813
Mt. Baker (West Block)	9,688	17,130
Mt. Baker (South Block)	2,152	4,223
Mt. Baker (Noisy-Diobsud)	5,486	44,899
Oakes Peak	654	950
Alma Copper	1,752	6,441
Hidden Lake	569	6,083
Glacier Peak H	2,153	5,786
Glacier Peak I	2,850	9,905
Glacier Peak G	378	8,359
Glacier Peak J	11,373	14,598
Glacier Peak M	695	360
Glacier Peak A	0	443
Glacier Peak L	2,360	11,867
Glacier Peak B	3,482	15,164
Glacier Peak K	6,776	38,733
Pressentin	7,157	7,900
Higgins Mountain	7,517	5,660
Prairie Mountain	2,237	1,585
White Chuck Mountain	1,603	4,120
Boulder River	5,465	26,842
Eagle Rock	1,625	31,551
Tolmie Creek	274	0
Clearwater	4,092	4,711
Lonesome Lake	42	253
Sun Top	1,244	1,142
Silver Creek	105	950
Norse Peak	3,417	6,676
TOTAL	93,716 (23 %)	309,214 (77 %)

Timber Supply

What is the capability and suitability of the Forest to produce timber?

What should the timber harvest level be, considering all resources on the Forest and their relationship to social, economic, and environmental factors including local, regional, and national demands?

Background: A key public issue and management concern, and an area of great controversy. Additional facets are the amount of old growth remaining and jobs. While the timber industry is a small part of the overall Puget Sound economy, it is still important; lumber production provides just over 4% of the wage and salary jobs in Skagit County, 2-3% of wage jobs in Whatcom, Pierce,

and Snohomish Counties, and less than 1% in King County (1988). About 35 percent of the total Mt. Baker-Snoqualmie acres were tentatively suitable.

Response: Timber production will occur at levels that are consistent with providing for increased emphasis on unroaded recreation; greater protection of scenic values on travel corridors; increased miles of trails; increased number of rivers recommended for Wild and Scenic River designation; and allocation of three Special Areas. Timber will be managed on about 346,000 acres, of which about 49 percent will be managed on long rotations of 100 years or more to meet nontimber resource objectives. About 2,900 acres are clearcut annually. Approximately 1,000 acres are precommercially thinned and 200 acres commercially thinned each year to improve stand density and species mix.

Timber is managed on a nondeclining flow harvest schedule. This harvest level reflects a balance between jobs, demand for wood products, income to the Treasury, and protection of the various nonmarket values desired by Forest users. The first decade ASQ is 108 MMBF. All of the ASQ assumes the use of even-aged silvicultural practices. Uneven-aged silviculture practices are considered in the project planning process, as individual stands are investigated for harvest opportunities.

The tentatively suitable acres not selected for timber production include those necessary to meet viable population levels for wildlife species dependent on mature and old-growth forest habitat, and portions of the riparian zone necessary to provide for the protection of riparian values. The tradeoffs are minimized through selection of most MR acres from lands that are not tentatively suitable and those that would be assigned to produce at reduced yield. Only those MR acres necessary for wildlife population dispersion requirements and those necessary to insure hydrologic cumulative effects do not result in unacceptable adverse effects are located on tentatively suitable lands. Annual timber outputs for Decades 1 and 5 of the Forest Plan are compared to the planned historic outputs in the table below.

Table 3-2
Planned Historic and Forest Plan Timber Outputs

	Historic	Plan Implementation	
	1979-88	Decade 1	Decade 5
Long-term Sustained Yield Capacity 1/			
- Million Cubic Feet	Not	30.4	----
- Million Board Feet	Calculated	----	----
Allowable Sale Quantity			
- Million Cubic Feet	47.0	22.4	29.7
- Million Board Feet	229.8	108.0	----
Suitable Land			
- Thousand Acres	547.0	346.0	346.0

1/ Board foot volume not calculated for long-term sustained yield capacity.

Old Growth Ecosystems and Fish, Wildlife, and Plant Diversity

What management direction is needed and where should action be taken that will maintain and/or enhance old growth and diversity to meet multiple use objectives?

Background: Old-growth and maintenance of diversity is of particular concern and has become a significant and controversial agency and public issue. In the past, much of the focus for this issue has been spotted-owl habitat; the issue now has a much wider scope. Old growth contains a wide variety of resource values, including wildlife habitat, aesthetic, forest diversity, recreation, and commercial timber. These areas are also valued by American Indians for religious and cultural use. In addition, there is increasing recognition within the scientific community that ecosystem diversity is important. Nearly all of the old-growth forest that remains in the Puget Sound Area is located in the National Forests or National Parks.

The most recent (1976) vegetation inventory for the Forest, updated to reflect harvest through 1988, indicates there are about 643,500 acres of old growth (trees 21" or greater DBH) within the Forest. Approximately 232,500 acres (36%) are located in wilderness and not available for harvest. An additional 134,400 acres outside wilderness are considered unsuited for timber production (either withdrawn from timber production or unsuited because of highly unstable soils and difficulty in reforesting the areas).

The northern spotted owl is closely related to the old-growth issue. About 500,000 acres of suitable spotted owl habitat have been identified on the Forest. Between 1980 and 1989, 55 pairs of spotted owls and 177 individuals have been sighted on the Forest. The FSEIS amending the Regional Guide estimated spotted owl habitat capability on the Forest at 121 pairs.

The Forest provides habitat for a variety of wildlife species, including four federally-listed threatened and endangered species. The variety of elevation, aspect, soil depth, climate, and vegetation create a naturally diverse mosaic of habitats within the Forest boundary. An important facet of this issue is the distribution and protection of suitable habitat to ensure species viability through genetic exchange.

There are approximately 1,500 stream miles and over 12,000 lake acres on the Forest that serve as both seasonal and year-round spawning and rearing habitat for anadromous and resident species. Indian tribes, sport and commercial fishing interests, and state and federal fishery agencies are increasingly concerned about the effects of water quality on the anadromous fish resource.

Response: The Forest Plan maintains approximately 502,500 acres of old growth in allocations not suitable for timber production (e.g. wilderness, unstable soils, regeneration difficulties, dispersed recreation, special areas, spotted owl habitat, mountain goat habitat, Research Natural Areas, etc.). No areas are specifically allocated for old-growth management for amenity values. At the end of the first decade, 624,500 acres of the current 643,500 acres of inventoried old-growth is expected to remain.

A spotted owl habitat network consisting of 76 habitat areas each containing 2,200 acres, if possible, is established. The network consists of dedicated SOHA's outside wilderness areas, habitat areas in

Wildernesses, and other habitat areas in management areas without scheduled timber harvests. Other spotted owl habitat outside the network remains available for the owl as a result of other allocation decisions that preclude development of those acres. Of the nearly 500,000 acres of suitable spotted owl habitat on the Forest, about 350,000 acres (71%) will be protected in SOHA's and through other allocation decisions.

Further changes in direction for protection of spotted owl habitat are likely. The recent release of the report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl and the upcoming decision of the U.S. Fish and Wildlife Service on the listing of the species may require changes in the direction of the Forest Plan. As new national and regional direction is established, the Plan will be amended to incorporate that direction.

The Forest Plan allocates 174,000 acres specifically for the protection, maintenance, and/or improvement of wildlife habitat including the 54,200 acres specifically set aside for northern spotted owl habitat. Allocations made specifically for other wildlife habitat protection, improvement, and maintenance are:

19,300 acres for pine marten, pileated woodpecker, and associated species;
47,000 acres for riparian dependent species and fish habitats;
34,000 acres for deer and elk habitat;
17,100 acres for mountain goat habitat; and
2,800 acres for northern bald eagle habitat.

Land allocations and standards and guidelines are used to meet part of the riparian management requirements and fish habitat needs. To fully meet riparian and water quality management requirements, a constraint is established on the maximum number of acres that can be harvested in a given watershed in a decade. These limits on final harvest are incorporated as Forest Plan standards and guidelines. High levels of investments will be made in habitat improvement projects to benefit anadromous and resident fish.

Classification is recommended for five new Research Natural Areas, totaling 9,306 acres: the North Fork Nooksack Addition, Lily Lake, Perry Creek, Green Mountain, and Chowder Ridge. The three existing RNA's are retained.

One botanic area is allocated - Sulphur Creek Botanic Area; it contains a unique, low-elevation vegetative community (silver fir and associated species) on a lava flow. Two other special areas are allocated: Mather Memorial and Heather Meadows.

American Indian Religious and Cultural Use

What policy and management direction is needed to comply with the Native American Religious Freedom Act and various treaties?

What are the effects of meeting this direction in terms of outputs, costs?

Background: At least 23 American Indian tribes have occupied or used territory within the National Forest boundary. Currently, about 15 tribal groups use the

Forest for religious, ceremonial, and/or cultural purposes. The Forest has inventoried 450,000 acres of use areas and sites. Of concern to a number of the Tribes are the effects of management activities on water quality and protection and enhancement of anadromous fisheries. Cedar is also an important resource.

Response: High protection of religious and cultural use areas for American Indians will be provided on lands where no timber harvest of road construction is planned and lands where the expected frequency of human contact is low. Moderate protection includes areas where no timber harvest or road construction is planned, but where human encounters are more likely. The Plan will afford a high to moderate degree of protection for the following acres, displayed in Table 3-3. Lands are not specifically allocated to "Indian Religious Use" nor are these acres shown on the map, to protect confidentiality. A total is not appropriate here, as there is overlap among acres protected.

The existing consultation process (with Tribes prior to any ground-disturbing project proposed in a use site or area) is continued.

Table 3-3
Religious and Cultural Use Areas With Moderate to High Protection From Development

	.....Approximate Acres.....		
	Type of Protection		Total Area Managed
Type of Sites/Area	Moderate	High	for Nondevelopment
Spirit Quest Sites	13,326	59,532	72,858
Legend Sites	1,288	3,083	4,371
Cedar Areas	15,543	50,262	65,805
Ceremonial Flora Areas	19,809	73,238	93,047
Cemeteries	0	317	317

In addition, the Plan will provide for a high level of investment for habitat enhancement for anadromous (and resident) fish. The hydrologic cumulative effects management requirement is designed to insure that effects of management activities prescribed by this Plan meet the intent of water quality laws and regulations.

A Forest-wide standard and guideline is included in this Plan to favor regeneration of western red cedar on sites where it now occurs or where it could successfully occur.

Chapter 3

Recreation Opportunities

To what extent can the Mt. Baker-Snoqualmie provide recreation opportunities and how should they be managed.

Background: The Mt. Baker-Snoqualmie contains some of the most scenic areas in the State. Its proximity to the major metropolitan areas along Puget Sound and the variety of opportunities available is reflected in the continual growth of recreation use. Use is now approximately five million RVD's per year (1989). It is expected that the demand for recreation on the Forest will grow through the end of the century.

The Recreation Opportunities issue includes several sub-issues or facets. The more significant ones are: developed recreation needs and opportunities; dispersed recreation needs and opportunities, including roadless and undeveloped areas; wilderness use and management; and trail needs and opportunities.

The Forest has 38 campgrounds that can accommodate about 500,000 recreation visitor days use per year. There are seven alpine ski areas that can accommodate approximately 40,000 skiers at one time. Trail mileage on the Forest is made up of 849 miles outside wilderness and 545 miles within wilderness. A variety of types of trails are provided, but the majority are hiker and pack and saddle trails. The Forest contains all or parts of eight wilderness areas with a total of approximately 722,000 acres within the Forest. Developed recreation demand (primarily alpine skiing and developed campgrounds) is well below the Forest capacity. Roaded dispersed recreation capacity far exceeds current use. Unroaded dispersed recreation use outside wilderness currently exceeds the capacity of the Forest. Wilderness use is nearing the practical capacity of the Forest. It is likely that wilderness demand will exceed capacity in the near future.

Response: In this Plan, the overall emphasis will continue to be on dispersed recreation; however, future demand for developed recreation is also addressed.

Developed Recreation. Rehabilitation of existing sites would be a top priority; about 10% of existing units will be reconstructed each year for the next ten years. In the first decade, approximately 100 new units (500 people at one time) would be added to existing campgrounds to provide additional capacity if needed. Limited expansion of day use facilities will occur to meet projected increases in demand

Dispersed Recreation and Trails. Land allocations in the Forest Plan result in approximately 27 percent (273,400 acres) of the Forest outside wilderness being available for nonwilderness, unroaded dispersed recreation. The majority of these opportunities will be in the semi-primitive nonmotorized recreation opportunity spectrum (ROS) class. This will provide alternatives to recreationists impacting wilderness, and help reduce conflict between different recreation uses groups in other areas.

Approximately 200 miles of new, nonwilderness trail will be constructed in the first decade; 30.5 of these will be open to motorized use. Trail reconstruction, first decade, will be done on another 493 trail miles.

These trails will generally be constructed in the semi-primitive nonmotorized and roaded natural ROS areas. Trail system planning will become an integral part of all project planning to assure continuation of a top-quality trail program. Approximately 25 miles of existing roads will be closed to passenger vehicles to provide more opportunity for unroaded dispersed use and discourage access to over-used, fragile destination areas. Management direction in the Mt. Baker National Recreation Area will provide for motorized use (snowmobiles) during those months with adequate snow cover, and for nonmotorized use during the remainder of the year.

Wilderness. The physical, social, and managerial settings within wilderness would be managed to meet standards set under Limits of Acceptable Change (LAC's) in the wilderness recreation spectrum (WRS). Approximately 20 miles of new trail would be built. Within wilderness, General Trailless areas (457,000 acres) will usually remain trailless; Dedicated Trailless areas (191,600 acres) will be managed forever trailless.

Visual Quality. The public concern for the visual condition of the Forest is addressed in this Plan: 23,400 acres of scenic viewshed, foreground and 95,800 acres middleground, along heavily-used, scenic highways are managed for visual quality and other resource uses. Standards and guidelines provide for timber harvest at 65 percent of full yield on the suitable acres in the foreground, and 86 percent of full yield on suitable middleground acres.

Wild and Scenic Rivers

How should the potential wild and scenic rivers of the Forest be managed and their values protected?

Background: There is one designated Wild and Scenic River on the Mt. Baker-Snoqualmie - the Skagit, designated in 1978. Portions of the Skykomish River are designated a State Scenic River (applicable to city, county, and state lands). There are 47 eligible rivers on the Forest; outstandingly remarkable values include fisheries, scenery, wildlife, recreation, and ecology. There is considerable public and agency interest in this issue.

Response: In this Forest Plan, 30 rivers - totaling 451.8 miles - are recommended for inclusion in the National Wild and Scenic River System. Until Congressional action, the values contributing to a river's particular classification (wild, scenic, or recreation) will be protected. Forest lands adjacent to the 30 suitable rivers will be managed to maintain their eligibility. Refer to Appendix E, FEIS for more detailed information.

Skagit Wild and Scenic River. Management direction for this Congressionally designated river system (158.5 miles and totaling 38,939 acres) will follow the River Management Plan, Skagit River Record of Decision, August 8, 1984, which is incorporated into the Forest Plan.

Chapter 3

Management of Municipal Watersheds

What activities should be permitted within municipal watersheds?

What measures should be taken that will maintain or enhance water quality?

Background: The Forest contains a significant portion of the watersheds supplying the cities of Seattle, Bellingham, Everett, and Tacoma. A number of smaller municipalities also obtain water from the Forest. Maintaining high water quality is an objective of many agencies and individuals; there is concern about the effects of management activities, including recreation, on water quality. In the Cedar River Watershed, the management goals of the 1962 Agreement (between the City of Seattle and the Forest Service) have recently been modified for city-owned lands, by the City of Seattle's Secondary Use Policies.

Response: Best Management Practices for this Plan are described in Appendix I. In addition, the Plan responds to this issue by meeting water quality management requirements, which are expressed as a maximum number of acres available for final timber harvest, by watershed. Refer to Chapter 4 of this document, Forest-wide Standards and Guidelines for Water Resources and Riparian Areas. Water quality will be maintained or enhanced by adherence to Regional and Forest standards and guidelines. Maintenance of riparian values in riparian areas is emphasized and timber yields in those management areas will be approximately 63 percent of full yield. In all municipal watersheds, water and water quality are recognized as key resources.

In the Cedar River Watershed, the Forest Service will initiate negotiations on a new Cooperative Agreement between the City of Seattle and the Forest to re-establish goals and objectives for management of the watershed. Until a new agreement is negotiated, the Mt. Baker-Snoqualmie will not enter new land exchanges affecting National Forest land in the watershed. Pending a new agreement, the 1962 Agreement will remain in effect. When a new agreement is reached, the Forest Plan will be amended to incorporate its goals and direction.

The Green River Watershed will be managed under the terms of the 1984 Memorandum of Understanding with the City of Tacoma. As land exchanges are completed with the City, public use rights are relinquished on roads no longer needed to access National Forest land. Dispersed recreation is emphasized; overnight camping is allowed.

The Sultan River Watershed will be managed under the terms of the 1963 Memorandum of Understanding between the Forest Service, the City of Everett, and the Snohomish County Public Utility District. Management emphasizes watershed protection, recreation use at developed sites (no water contact sports),timber production, and maintenance of fish and wildlife habitat. Dispersed recreation is permitted, but not encouraged.

Other municipal watersheds will be managed for a full range of outputs, including timber harvest and recreation. Road construction/reconstruction and maintenance are permitted. Dispersed recreation, including overnight use and ORV use, is permitted in designated locations.

Effects of Timber Management and Related Activities

What management direction is needed for timber harvest and road construction activities to benefit or maintain the quality of other resources?

Background: Management for the commercial production of timber includes a number of activities: road construction and/or reconstruction, preparation of the land for planting seedlings, possible thinning, etc. These activities have direct and indirect effects on other resources, including: fish and wildlife habitat, soil, and water. Also, recreation opportunities and the visual condition of the Forest change in response to these activities. For example, the visual impact of clear-cutting and loss of habitat for some wildlife species is a major concern of environmentalists, wildlife advocates, and some hunting interests.

Each step in the process of timber harvesting, including road construction, may have a number of short-term and long-term impacts. Timber harvesting may enhance elk habitat (increased forage in clearcuts) but reduce the visual quality and the amount of wildlife habitat available for species dependent on mature conifer forests.

Response: Unacceptable adverse effects to Forest resources will be prevented or mitigated using the Regional, Forest-wide, and management area standards and guidelines. Best Management Practices will be selected and applied (site-specific) to achieve water quality regulations. Refer to Appendix I of the FEIS. To fully meet riparian and water quality management requirements, a constraint is established on the maximum number of acres that can be harvested in a given watershed in a decade. These limits on final harvest are incorporated as Forest-wide Standards and Guidelines.

An environmental analysis will be prepared for each project to assess the impacts on other resources, unit size and dispersion requirements, logging methods and practices, road location, design and construction standards, silvicultural prescriptions, and other pertinent considerations. Analysis will include appropriate documentation, to meet the National Environmental Policy Act (NEPA) and implementing regulations.

Adjacent and Intermingled Lands

How should National Forest lands adjacent to lands of non-federal owners be managed?

What management activities should be conducted on National Forest lands that are located near private development?

Background: Thirteen percent of the lands within the Mt. Baker-Snoqualmie National Forest are non-Federal, located mostly in the south half of the Forest. In most cases, the objectives and subsequent land practices of the non-Federal owners differ from those of the Forest Service, yet directly affect management of National Forest lands. Concern and conflicts arise because of these different management practices. For example, it is not uncommon that old-growth National Forest lands are surrounded by harvested lands in other ownership.

Response: In this Forest Plan, Best Management Practices will be selected and applied for site-specific projects, to achieve water quality regulations. Refer to Appendix I of the FEIS. In addition, to fully meet riparian and water quality management requirements on National Forest lands, a constraint is established on the maximum number of acres that can be harvested in a given watershed in a decade. These limits on final harvest are incorporated as Forest-wide Standards and Guidelines. It is the intent of this Plan that the quality and quantity of these resources not be diminished, but maintained at current levels or improved, if possible. Specifically, this means that timber harvest activities on National Forest lands will be deferred if the MR's for wildlife, soil, and water cannot be met.

A Land Adjustment Plan has been developed and is included as Appendix G in this Forest Plan. The goal of landownership adjustment is to achieve an ownership pattern that best accommodates the land and resource objectives of this Forest Plan. There will be a continued need for road cost-share agreements until such time as ownership consolidation is achieved.

National Forest management adjacent to privately owned lands will be coordinated with approved County Plans and County Planning Departments.

CHAPTER 4 - FOREST MANAGEMENT DIRECTION

This chapter - Forest Management Direction - is the heart of the Plan. It has five major sections.

Part A includes the Forest Management Goals: multiple use and other goals established in the planning process and used to develop this Plan.

Part B, Desired Future Condition: this narrative is a brief description of what the Mt. Baker-Snoqualmie National Forest should look like at the end of ten years, and - if the Plan were to remain unchanged - for fifty years.

Part C, Forest Management Objectives: this section includes the levels of goods and services, outputs and activiites, and necessary budget which are anticipated as this Plan is fully implemented. Included is a narrative Resource Summary of how each resource and its activities will be managed under the Plan.

Part D includes the Forest-wide Standards and Guidelines, which direct all resource management activities and uses on the Forest. The Forest-wide standards and guidelines generally apply to all areas of the Forest, (unless exceptions are noted in specific Management Area prescriptions. The Forest-wide standards and guidelines provide standards for performance, and establish bounds and constraints for these activities and uses.

Part E, Management Area Prescriptions: the prescriptions identify the management activities that can occur within each management area and the standards and guidelines that apply to each.

A. FOREST MANAGEMENT GOALS

Forest-wide management goals describe the state or condition of Forest resources and uses that the Plan is designed to achieve. Management objectives and standards and guidelines are then developed to guide the achievement of these goals.

The following factors aided in developing management goals:

- Capability, availability, and suitability of the Forest to produce goods and services
- Applicable Laws and Regulations
- National and Regional Goals
- Public Issues and Management Concerns

Goals

Recreation

1. Provide a broad spectrum of recreation opportunities, with an emphasis on those opportunities which require a natural setting.

2. The forest will be responsive to a greater diversity of forest customers by emphasizing the needs of the very young and old, the disabled, and those of culturally and economically diverse background.

3. Become more knowledgeable of the forest's customer. Embark on market research techniques to assure that recreation facilities, opportunities and services focus on the needs of our customers.

4. Encourage a sense of ownership through expanded Interpretation and Education activities; emphasize traditional values of "conservation", and market the "special places", special activities and special opportunities of the MBS.

5. Provide a full spectrum of recreation facilities (from full service resorts to trailheads) to serve all of the recreation users, providing amenities (hot water, showers, trailer dumps) where necessary and appropriate, that allow the recreating customer to enjoy the natural setting while creating a sense of quality, comfort and security.

6. Encourage partnerships of public and private suppliers of recreation services and facilities and administer the partnerships to ensure and enduring relationship of mutual gain.

7. Recreation is a co-equal partner in Multiple Use Management that is guided by the need to Regain Public Trust through Quality Management. This needs do serve as a tool to minimize conflicts between users and resources.

8. Professional recreation management flows from a work force with a full spectrum of career opportunities dedicated to the traditional values of conservation, demonstrating exceptional skills, providing quality service, and projecting a favorable image of the Forest Service.

Wilderness

1. Manage wilderness for the use and enjoyment of people in such a manner as will leave wilderness values unimpaired for future.

2. Wilderness is to be managed to prevent degradation. The non-degradation principle seeks to maintain each wilderness in at least as wild a condition as it was at the time of classification.

3. Provide for the protection of the area, preservation of its wilderness character through dissemination of information regarding proper use.

4. Manage wilderness using strategies that will facilitate natural ecosystems and processes, including prescribed burning.

Wildlife and Fish including Threatened and Endangered Species

1. Maintain the vitality, distribution and abundance of animal populations. At a minimum, maintain viable populations of existing native and desired non-native vertebrate species on National Forest lands. No species should be elimanated from an area. Maintain the longterm productivity of wildlife habitats.

2. Identify Threatened, Endangered, and Sensitive plant and animal species habitat. Protect, maintain and/or enhance this habitat in accordance with Recovery Plans. The overall goal is to prevent the Federal listing of Sensitive species and /or, to pursue the delisting of Federally listed species. Develop management guides for T & E species which carry out these goals.

3. Enhance habitat for all native and desired non-native vertebrate species on National Forest lands, with the goal of providing habitat, and a variety of consumptive and non-consumptive fish and wildlife related recreation opportunities.

4. Develop a KV program to accomplish fish and wildlife habitat improvement and/or mitigation needs within timber sale areas.

5. Encourage partnerships with the public and private entities to build rapport with consumptive and non-consumptive user groups and committees, as well as completing habitat enhancement, inventory, and monitoring projects.

6. Cooperate with Washington State Wildlife and Fisheries Agencies and American Indian Tribes to provide habitat for desired levels of resident and anadromous fish.

7. Provide designated habitat areas for Management of Indicator Species.

8. Develop complete inventories of threatened, endangered, and sensitive species. Develop reliable and accurate baseline indicies for other management indicator species, and monitoring procedures for accurately determining the responses of these species to management activities.

9. Provide opportunities for the public to enjoy wildlife through consumptive and non-consumptive activities. Emphasize informational and educational opportunities for Forest users to learn about wildlife and their habitats. Increase opportunities for wildlife viewing and photographing on the Forest.

10. Manage for the highest levels of populations of indicator species and other desired wildlife appropriate to an area and compatable with the Management Area allocation.

11. Protect special and unique habitats and ensure the maintenance of habitats which are fragile or uncommon.

Longterm Productivity and Diversity

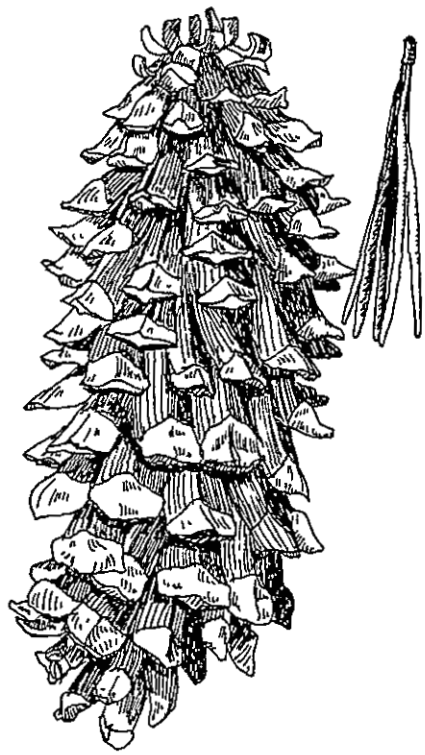
1. Maintain native and desirable non-native plant and animal species and communities.

2. Provide for all seral stages of terrestrial and aquatic plant associations in a distribution and abundance to maintain the productivity of these communities.

3. Provide for wildlife diversity through genetic interchange by linking late seral stage areas with corridors of mid to late seral stage vegetation.

4. Conserve or enhance long-term site productivity. For example, maintain down large and fine woody material following timber harvest.

5. Provide diversity within forested stands by maintaining more than one horizontal vegetative layer.



Range

1. Develop opportunities, where needed, to utilize transitory range by domestic and recreation livestock where they don't conflict with other resource goals, including those for wildlife and riparian management.

Timber

1. Apply appropriate silvicultural systems to attain long-term sustained yield on all suitable lands assigned to timber production, either full or partial yield.

2. Utilize silvicultural systems which best meet needs of site, species, and other multiple use objectives.

3. Conduct mortality salvage harvest on all accessible, available, capable, and suitable lands in a timely manner compatible with other resources and uses.

4. Increase utilization of wood residues to minimize site preparation and hazard reduction costs when compatible with other resource objectives.

5. Utilize burning only as a last resort method of disposal or where site preparation through burning is needed.

6. Provide maximum opportunities for gathering of firewood commensurate with resource objectives.

7. Maintain prime forest lands in timber production.

8. Utilize genetically improved stock for reforestation.

9. Promptly reforest all capable, available, and suitable lands following harvest, fire, insects, etc.

10. Maintain or expand timber land base in land exchange actions.

11. Utilize appropriate logging systems to achieve multiple use and silvicultural objectives in a cost-efficient manner.

12. Use KV funds to enhance recreation, fish, wildlife where appropriate.

Soil, Water, Riparian and Air

1. Maintain soil and water resources and do not allow significant or permanent impairment of the productivity of the land.

2. Protect streams, lakes, wetlands, and other bodies of water. Protect soil and riparian vegetation by appropriate buffer zones or modified silvicultural prescriptions, reflecting local topographic, soil, and vegetative conditions.

3. Restrict or prohibit developments and require "flood proof" road crossings in flood plains and wetlands.

4. Maintain water quality by complying with State of Washington Water Quality Management Plan developed pursuant to Federal Water Pollution Control Act. Provide high water quality to meet the needs of the users of that water, including fish populations.

5. Develop a KV program to provide for improvement and mitigation of soil and water resources in timber sale areas.

6. Manage municipal-supply watersheds to provide a level of water quality and quantity which, with adequate treatment by the purveyor, will result in a satisfactory and safe water supply.

7. Do not allow significant or permanent impairment to air quality or air quality related values.

8. Maintain the air quality over the Forest to meet Federal and State standards and protect air quality related values from pollutants generated within or downwind of the Forest.

9. Manage air pollutant generated activities to insure compliance with State and Federal Laws.

Minerals and Energy

1. Support orderly exploration and development of mineral and energy resources.

2. Include special stipulations in leases and permits, as necessary, to integrate exploration and development with the protection and management of other resources and uses.

3. Minimize adverse environmental effects of mineral and energy resource exploration, development, and extraction on other resources and uses.

Lands

1. Improve administration and management efficiency through appropriate land ownership adjustments. Give priority to land exchanges that maintain or improve the capability of the Forest to produce goods and services.

2. Give preference to use of purchase authorities to acquire lands important for wilderness, wildlife, or recreation resources.

3. Acquire road and trail easements which provide for public and commercial access to all National Forest lands.

4. Advocate that hydro-electric project license provide recreation opportunity development, operation, and maintenance to meet the recreation demand generated by the project, and protect and enhance affected fisheries.

5. Advocate land exchange and purchase which support recovery programs for threatened and endangered species.

Facilities

1. Build and maintain transportation system facilities to the minimum standard needed to support planned uses and activities.

2. Manage the transportation system at minimum standard necessary to provide for public safety.

3. Encourage the development and use of mass transit facilities to heavy public use areas, such as winter sports complexes.

4. Locate support facilities to provide for management efficiency, public service, and energy efficiency.

5. Utilize alternative energy sources for water and space heating.

6. Minimize adverse effects of vehicular traffic on wildlife.

Protection

1. Establish areas and conditions under which prescribed fire, through the use of planned and unplanned ignitions, will be used to meet management objectives.

2. Treat natural and created fuels to levels needed to meet resource needs.

3. Cooperate with the appropriate agencies in fire prevention, presuppression and suppression activities.

4. Cooperate with the appropriate agencies in law enforcement activities on National Forest lands.

4. Utilize integrated pest management processes in determining needed control actions.

Wild and Scenic Rivers

1. Utilize State, County, local and other Federal agency authorities for management of River segments on private lands.

2. Provide opportunities for public access and use of the rivers while providing for the rights of adjoining private owners.

3. Maintain a leadership role in protecting designated Wild and Scenic River values.

Visual Quality

1. Establish and implement visual quality objectives for all Forest lands.

2. Maintain the visual variety that is characteristic of the Northwest Cascades.

Archaeological and Historical Properties

1. Inventory, evaluate and protect cultural resources on all Forest lands. Give priority for inventory and evaluation to those areas where ground-disturbing activities are planned and where cultural resources are most likely to be found.

2. Work towards thematic evaluations in conjunction with Washington State Historic Preservation Officer.

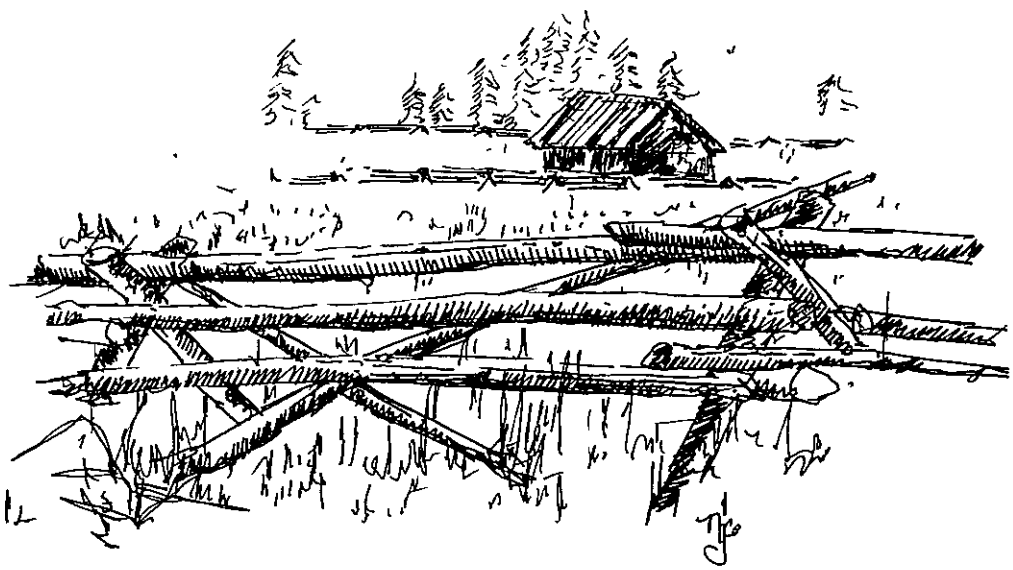
3. Protect and interpret resources representing the full range of cultural resource types present on the Forest. Priority in protection activities will be based on level of significance (National, State of local), and frequency of the resource type within the Forest. Protection will be explicitly considered for all significant resources.

4. Coordinate interpretive efforts with Federal, State and local Agencies, local historical societies, universities, businesses, volunteer associations and other interested groups.

American Indian Religious and Cultural Uses

1. Coordinate with American Indian tribal leaders to improve the inventory of religious and cultural use sites on National Forest lands.

2. Consult with American Indian tribal leaders during planning and design of proposed projects within inventoried sites.



B. DESIRED FUTURE CONDITION

Implementation of this Forest Plan is an incremental step in progressing from the current situation (Chapter 2) to the desired future condition of the Forest. In many instances this desired future condition cannot be attained during the life of this Plan (10-15 years) but will require several decades.

The incremental change in any particular decade can best be characterized as evolutionary as opposed to revolutionary.

The desired future condition of the Forest cannot be summarized in a single statement, as it differs between management areas. The long-term desired future condition for each of the management areas is discussed later in this chapter, in Part E, Management Prescriptions. A general discussion of some of the more significant changes on the Forest is presented below.

The Forest In Ten Years

The physical and biological changes in the structure of the Forest, as a result of carrying out the management practices contained in this plan, will be subtle on a Forest-wide basis, but may be more dramatic on an area-specific basis.

A spectrum of dispersed recreation opportunities from primitive to roaded modified will exist on the Forest. There will be a slight reduction in the availability of primitive and semi-primitive nonmotorized opportunities, as some areas currently providing these recreational opportunities become developed. Opportunities for large group activities in primitive and semi-primitive nonmotorized settings will have decreased to the point that they may be unavailable or restricted at the more popular destination points. Forest trails will have increased in mileage and will be in better condition, safe and well maintained. Summer ORV use will be limited to a few specific sites and trails.

Opportunities for a variety of developed recreation activities will exist. The condition of the physical facilities at developed sites will have improved to the point that all facilities in place will be safe, functional, and attractive.

Use at the more popular destination sites in wilderness will have increased to the point that physical, biological, and social changes have approached, or reached, the Limits of Acceptable Change (LAC). Management controls to limit use will have been implemented. Efforts to rehabilitate areas of overuse will have been implemented, but methods and techniques to accomplish needed rehabilitation will still be in the developmental stage. The effects of fire in wilderness may be more visible, as prescribed fire is used more frequently to alter vegetative patterns.

The roadless areas of the Forest will have decreased by 20,300 acres. This figure equates to 94% of the original roadless acres.

The foreground of scenic viewsheds will have changed very little from the condition they were in at the time this Plan was implemented. Occasional small clearcut harvest units will be visible, but will borrow from or repeat the form, line, color, and texture of the natural landscape. An exception will be in areas of intermingled ownership, where nearly all non-Federal lands will have undergone clearcut timber harvest.

Scenic viewshed, middleground, will have undergone more change than foreground, but the management activities will be subordinate to the natural landscape. An exception will be in areas of intermingled ownerships.

More than 50% of the Forest's acreage will be inventoried for cultural resources. All reported archaeological and historical sites have been recorded. Interpretation of these cultural resources is fully integrated into the recreation program, with a variety of established interpretative sites and programs.

Less inventoried use area will remain suitable for American Indian religious and cultural uses; however, such uses will continue. Some users may have to shift locations of spirit and vision questing activities, or find new localities for collecting ceremonial flora.

Habitat necessary for wildlife species that prefer or require old growth forests will have been reduced, but will still be well above that needed to maintain viable population levels and will be distributed so as to provide genetic viability. Wildlife preferring younger successional stages of forest habitat will show an increasing trend in populations. This trend may not be measurable except in areas of intermingled land ownership, where timber harvest on non-Federal lands has proceeded at a faster rate than on National Forest lands.

Deer and elk will increase, and mountain goat populations will remain essentially the same as they are currently. Vegetative manipulation on winter and summer range through timber harvest activities and forage improvement projects will have brought about short term increases in deer and elk populations.

Populations of bald eagles on winter feeding grounds will remain the same or show a slight increase. Populations of nesting bald eagles on National Forest lands will remain the same or show a slight increase. Populations of grizzly bear, American peregrine falcon, and gray wolf will be similar to current populations, although much more accurate census data will be available for these species.

Bald eagle nesting and roosting areas, and any known peregrine falcon nesting areas will be managed under approved site management plans. Management guides will have been developed for all sensitive species, and some species may have been removed from the sensitive list through management protection or enhancement.

The Forest will have developed opportunities for the public to view wildlife and to increase their understanding and appreciation of wildlife. Programs, displays and publications help the public learn to experience wildlife in ways that are least impactful to their habitat and populations.

Partnerships have been formed with a wide variety of users for habitat enhancement, protection and species inventories and monitoring.

Anadromous fish habitat will have improved significantly on National Forest lands, through habitat improvements and more refined management practices in riparian areas. Resident fish habitat will also have improved, through enhancement projects.

Progress towards reaching the desired future condition on that portion of the Forest managed for timber production will have been steady, but slow. A total of 28,650 acres will have been converted from older age classes to younger ages. Age class distribution will now favor the younger age classes of 110 years or less (204,000 acres out of 346,000), mortality will remain higher than desired, and growth will be lower than that possible when a fully managed condition is reached. Approximately one percent (2,865 acres) per year of the lands suitable for timber production will have been harvested. Approximately 66% (18,879 acres) of the total acres be old growth, and nearly all of the harvesting will be by clearcut harvest systems.

The quality of raw water flowing from municipal watersheds will continue to be of good quality. Increased requirements for public health will have resulted in some of the larger water purveyors having installed filtration equipment. Several of the smaller municipal watersheds will have been abandoned in favor of wells or alternative water sources.

There will be no significant change in activity related to locatable minerals. Minor increases will occur in leasable minerals area with increasing interest in geothermal resources. Anticipated downturn in use of common variety materials for forest development will be offset by increases in public demand for these minerals.

Opportunities for the Forest to help enhance the vitality of surrounding communities will occur through a Regional initiative called the Pacific Northwest Strategy. It is envisioned that the Pacific Northwest Strategy will be a new focus of operation for many people, one that empowers Forest Service people and local citizens to look and work beyond the traditional boundaries. At the same time, it reaffirms and emphasizes working with other government agencies, local businesses, and the communities themselves in a spirit of interdependency and cooperation that has always existed at the local Ranger District level. As the Strategy becomes an integral part of doing business, its central focus will be to foster and enhance communication, cooperation, and partnerships.

The Forest In Fifty Years

This Forest Plan will be reviewed every five years and revised every 10 to 15 years. The following describes the progress being made towards the desired future condition of the Forest if this Plan were to remain unchanged for 50 years. The desired future condition varies by management area and is included in the management area prescriptions, Part E in this chapter. The following is a general description of the Forest as a whole.

Chapter 4
Desired Future Condition

A wide range of dispersed recreation opportunities will exist on the Forest. Acres available by recreation opportunity spectrum (ROS) class will have stabilized. Competition for use of primitive and semi-primitive nonmotorized areas will be high and some form of use limitation will have been imposed to maintain the attributes of isolation, solitude, and an unmodified natural environment.

A wide variety of developed recreation opportunities will exist. New developments will have been added to meet an increased demand. Facilities will be well maintained, and attractive. New facilities will generally be set back from bodies of water to lessen the impacts on riparian resources.

Wilderness use will have stabilized at carrying capacity levels in all wilderness on the Forest. Use will be controlled through a variety of management techniques, but a permit system will have been implemented for at least the more popular areas of all wilderness. More of a mosaic of vegetative patterns will be evident as a result of the use of prescribed fire, although a large majority of the wilderness will still support vegetation in the later successional stages.

Scenic viewsheds will display more of a mosaic of differing age classes of vegetation than when the Plan was implemented. All age classes will still be represented. Desired visual quality levels will still be met and management activities will either not be evident or will be visually subordinate to the natural landscape. Viewsheds within areas of intermingled ownership will be more visually appealing than 10 years after implementation, when nearly all non-Federal lands had been recently clearcut harvested. Areas that were logged during the railroad era will be undergoing harvest of the second-growth stands.

The Forest will be completely inventoried for archaeological and historical properties. Protection and interpretation of a full range of cultural resources remains an integral component of the recreation program.

Acres available for American Indian religious and cultural uses will have stabilized.

On the portion of the Forest where vegetative manipulation occurs, habitat for wildlife species that prefer or require old-growth forests will have stabilized at the level necessary to maintain viable populations. Populations on a Forest wide basis will remain above viable population levels, due to additional available habitat in areas where no habitat manipulation occurs. Forest-wide distribution requirements are met. Wildlife species that prefer younger successional stages will still be increasing.

The implementation of habitat improvements over the past 50 years will have resulted in maintaining a high level of habitat capability for elk and deer. Mountain goat habitat capability may have decreased slightly.

Wintering populations of bald eagles on National Forest lands will have increased slowly over the past five decades. Bald eagle and American peregrine falcon nesting habitat on National Forest lands necessary to meet recovery objectives will be available. As recovery population objectives have not been developed, information is not available to suggest population trends for grizzly bear or gray wolf.

The public is provided with a variety of opportunities to view and photograph wildlife and to become informed on wildlife species, their habitat needs, and ways to enjoy them unobtrusively.

Anadromous fish habitat will be of high quality and little changed from that existing at the end of the first decade. Resident fish habitat will be of similar quality.

Age class distribution on lands suitable for timber production will have progressed towards a more even distribution, with a decrease in the older age classes (111,800 acres remaining), and an increase in those age classes younger than 100 years (234,600 acres). Mortality would have decreased and growth increased substantially, as a result of the younger age classes on the suitable lands.

The quality of raw water flowing from municipal watersheds will continue to be of good quality. All water purveyors will either be providing secondary treatment or have switched to sources other than surface water supplies.

Levels of mineral activity will increase in all areas.

Each community will have capitalized on its uniqueness and involved its citizens in the development of a desired future. The activities associated with the Pacific Northwest Strategy will continue to support the goals and plans of resource-dependent communities.

C. FOREST MANAGEMENT OBJECTIVES

This section describes Forest management objectives that support Forest management goals and set the Forest on a schedule toward achievement of desired future conditions. Plan objectives, expressed as average annual resource outputs and activities, are projected for the five-decade RPA planning period in the multi-page Table 4-1. The projected outputs are estimates of goods and services that should result as the Plan direction is fully implemented. Projected outputs and activities in the first RPA decade are averages for the first 10 years of Plan implementation. These projected resource outputs and activities tie directly to the data presented for Alternative J (Preferred) in the Final Environmental Impact Statement. Data comes directly from FORPLAN run reports or was estimated using data extracted from the FORPLAN run files.

Table 4-1 Page 1 of 5
Forest Plan Resource Outputs and Activities

Output/Activity	Unit of Measure	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Developed Recreation Capacity	MRVD's/Year	5,598	6,098	6,654	7,210	7,238
Non-wilderness Dispersed Rec. Capacity						
Roaded	MRVD's/Year	3,277	3,730	3,817	3,904	3,991
Unroaded	MRVD's/Year	208	182	160	149	149
Wilderness Capacity	MRVD's/Year	539	539	539	539	539
Trail Construction	Miles/Year	22	22	1	3	1
Trail Reconstr.	Miles/Year	49	2	5	5	5
Developed Site Construction	PAOT/Year	130	100	0	0	100
Developed Site Reconstruction	PAOT/Year	220	900	900	900	1,000
Recommended Wild & Scenic River	Total Miles 1/	452.1	.....	.....	.....	>
Recreation R.	Miles	168.9	.....	.....	.....	>
Scenic River	Miles	149.6	.....	.....	.....	>
Wild River	Miles	133.6	.....	.....	.....	>
Future Visual Condition						
Preservation	M Acres	772.0	733.5	730.9	729.6	729.6
Retention	M Acres	395.4	284.2	255.9	241.8	242.0
Partial Retent.	M Acres	204.2	335.5	353.9	363.0	363.0
Modification & Max. Modif.	M Acres	257.0	275.3	287.9	294.1	294.0

1/ Includes 176 miles outside National Forest Boundary.

Table 4-1

Output/Activity	Unit of Measure	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Roadless Areas 2/	M Acres	402.9				>
Roadless Areas 2/ Assigned to Roaded Mgmt. Prescript. but not developed in next 15 years.	M Acres	93.1				
Roadless Areas Assigned to Unroaded Mgmt. Prescriptions	M Acres	298.8				
Wildlife and Fish Use 3/	Total M WFUD'S/ Year	825	876	947	1,002	1,052
Hunting	M WFUD's/Year	418	443	463	474	474
Non-consumptive	M WFUD's/Year	25	26	27	28	28
Resident Fish	M WFUD's/Year	382	407	457	500	550
Anadromous Fish 4/	M WFUD's/Year	864	864	864	1,070	1,070
Mgt. Indicator Species 5/						
Bald Eagle	HC for Pairs 6/	4 (one active, 3 potential)				
Amer. Peregrine Falcon & Grizzly Bear	[Occasional sightings of these species have been recorded. Standards and guidelines address habitat management if confirmed to be present.]					
N. Spotted Owl	HC for Pairs 6/	114	104	95	87	83
Pine Marten	No. of Animals	4,440	4,070	3,710	3,420	3,260
Pileated Woodpecker	HC for Pairs 6/	890	810	740	680	650
Primary Cavity Excavators	% of Potential Population	40	40	40	40	40

2/ RARE II unroaded areas released by the Washington State Wilderness Act of 1984. The total 402,930 acres includes about 160,000 acres tentatively suitable for timber production.

3/ Figures used in calculating WFUD's are based on preliminary data. There is currently additional data that shows trends towards larger increases in non-consumptive fish and wildlife, and consumptive fish use with a smaller increase in consumptive wildlife use.

4/ WFUD's for anadromous fish occuring off-Forest not included in totals above.

5/ Other than bald eagle and primary cavity excavators, values are population estimates based on maximum habitat potential. Bald eagle numbers are derived from recovery plan breeding population objectives. Primary cavity excavators are % of potential population on lands suitable for timber production only; outputs will be 80% in riparian areas & 100% in wilderness.

6/ Habitat Capability for Pairs.

Table 4-1

Output/Activity	Unit of Measure	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Roosevelt Elk						
Winter Range	HC for Indiv 7/	770	690	660	680	710
Summer Range	HC for Indiv 7/	1,240	1,250	1,270	1,280	1,280
Black-Tailed Deer						
Winter Range	HC for Indiv 7/	15,160	13,310	12,510	12,840	13,580
Summer Range	HC for Indiv 7/	19,720	19,640	19,480	19,580	19,650
Mountain Goat	HC for Indiv 7/	1,450	1,440	1,430	1,420	1,420
Wildlife Habitat Improvement	Structures/ Year	1,520	1,520	1,520	1,520	1,520
	Acres/Year	885	885	885	885	885
Anadromous Fish Commercial Harvest	Total M Pounds/ Year	8,874	9,000	9,000	9,000	10,000
Habitat Improvement Over Present	M Pounds/Year	1,065	1,200	1,200	1,200	1,300
Range-Permitted Grazing	M AUM's/Year	1.....				>
Old Growth Remaining 8/	M Acres	625	599	580	561	535
Lands Suitable for Timber Production	Acres	346,411.....				>
Timber Harvest						
Clearcut	Acres/Year	2,865	2,980	3,278	3,409	3,409
Commercial Thin 9/	Acres/Year	200	200	200	200	200
Allowable Sale Quantity	MMCF/Year	22.4	25.7	27.9	29.7	29.7
	MMBF/Year	110	N/A	N/A	N/A	N/A
TSPQ	MMCF/Year	25.5	28.5	30.5	31.9	31.6
	MMBF/Year	122	N/A	N/A	N/A	N/A
LTSYC	MMCF/Year	30.4				>
Fuelwood	MMCF/Year	1.234	1.238	1.149	0.817	0.408
Reforestation 10/	Acres/Year	2,865	2,980	3,278	3,409	3,409
Planting	Acres/Year	2,239	2,541	2,395	2,700	2,705
Natural Stocking	Acres/Year	626	439	883	709	704
Timber Std. Improv	Acres/Year	996	2,911	1,801	2,137	2,124

7/ Habitat Capability for Individuals
8/ Decade 1 old growth remaining at the end of the decade.
9/ Commercial thinning planned outside of FORPLAN model.
10/ Includes all areas harvested by clearcut.

Table 4-1

Output/Activity	Unit of Measure	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Fuel Treatment 11/	Acres/Year	2,865	2,980	3,278	3,409	3,409
Water Yield	M Ac-Feet/Year	15,616	.....	.....	.....	>
Sediment						
Background	M Tons/Year	53.8	.....	.....	.....	>
Activity Over Background	M Tons/Year	34.7	34.3	32.8	32.5	32.4
Improved Watershed Condition	Acres/Year	35	.....	.....	.....	>
Energy Minerals	Billion BTU's Produced/Year	0	86	Unest.	Unest.	477
Non-energy Minerals	Cases/Year	115	Unest.	Unest.	Unest.	Unest.
Special Uses	Permits/Year	590	600	600	600	600
Road Construction						
Arterials and Collectors	Miles/Year	.8	.7	0	0	0
Timber Purchaser	Miles/Year	12.6	11.1	10.0	8.1	7.9
Timber Purchaser Road Reconstruct.	Miles/Year	40.1	46.0	50.0	54.0	53.4
Roads Suitable for Public Use by Passenger Car	Miles	1,039	1,204	1,271	1,317	1,353
Roads Suitable for Public Use, High Clearance Vehicle	Miles	1,483	1,719	1,816	1,881	1,932
Road Maintenance	Miles/Year	3,034	3,152	3,252	3,332	3,411
Local Roads Closed to Public Use 12/	Miles	512	229	165	34	126
Land Line Location	Miles/Year 13/	18	18	18	18	18

11/ Include's all types of treatment inc. broadcast burning, piling and burning, loping and scattering etc.

12/ These are local or timber purchaser roads that are closed but will be opened for timber sales in the future.

13/ Miles of land line marked and posted to standard.

Table 4-1

Output/Activity	Unit of Measure	Decade 1	Decade 2	Decade 3	Decade 4	Decade 5
Human Resource Prog.	Person-Yrs/Yr	29.....>				
Jobs	M Jobs/Year	28.8	38.6	46.3	52.6	59.0
Income	MM $/Year	522	Unest	Unest.	Unest.	Unest.
Payments to Counties	MM $/Year	4.9	6.3	6.7	8.1	9.6
Operational Costs	MM $/Year	13.3	15.3	14.1	14.6	14.7
Capital Investment Costs	MM $/Year	4.7	4.0	1.4	1.2	1.1
Total Budget	MM $/Year	18.0	19.3	15.6	15.8	15.9
Returns to Treasury	MM $/Year	16.8	23.9	25.7	31.4	37.7

Resource Summaries

The following resource summaries include a brief description of the resource program, how the resource and activities will be managed, and a description of outputs and activities to achieve management objectives. Detailed schedules of activities to achieve management objectives are in the appendices. These planned activities will be the foundation for developing the Forest's annual budget and program of work.

Recreation

The following section describes the dispersed and developed recreation programs and resource outputs planned and expected as a result of management under the Plan.

Dispersed Recreation

The assignment of land in the Plan will result in 16% of the total Forest acres (273,400 acres) being available for nonwilderness, unroaded dispersed recreation. These acres will provide the opportunity for 165,105 RVD's. The majority of these opportunities will be in the semi-primitive nonmotorized recreation opportunity spectrum (ROS) class.

An additional 93,100 acres will remain unroaded during the first decade, although assigned to management prescriptions that project future development. This will result in an additional 51,205 RVD's of unroaded recreation, available through Decade 1.

The primary management activities in the assigned unroaded recreation areas over the next decade will: provide alternatives to impacting wilderness, and help reduce conflict between different recreation user groups in other areas. Increased trail construction, greatly increased reconstruction, and maintenance will aid in accomplishing this goal. Approximately 200 miles of new nonwilderness trail will be constructed in the first decade. Twenty miles of wilderness trail will be constructed. Another 493 trail miles will be reconstructed during the first decade. For further details on the trail program, see Appendix E of this document.

Dispersed winter sports activities, such as cross-country skiing and snowmobiling, will continue to be encouraged. Where opportunities exists, both winter and summer dispersed recreation will be enhanced through timber sale activity by providing use sites, parking, trail access, and vegetative improvement. Additional Sno-Park facilities will be encouraged where the need is demonstrated.

The "Trail Management Plan" in Appendix E will attempt to reduce recreational conflicts between user groups. Whenever practical, these different uses (trail bikes, horses, hikers and mountain bikes) will be separated if conflicts cannot be avoided or minimized thru public information and education.

Roaded recreation will ultimately occur on 37% of the Forest (630,550 acres). These figures represent the rural, roaded natural and roaded modified ROS classes combined. This will provide the opportunity for 3,277,000 RVD's of recreational opportunities in a roaded environment in the first decade, rising to 3,991,000 RVD's by the fifth decade.

Commercial outfitters and guides will continue to be utilized as a method of meeting public demand, but new permits will be limited to a level that permits a balance between the individual non-guided user and those availing themselves of guide services.

Developed Recreation

Developed recreation will continue to be an important program on the Forest. By the end of Decade 1, demand for developed recreation will likely range form 2.8 to 3.5 million RVD's; this range is still below the existing practical developed capacity of the Forest. By the end of the fifth decade, the demand range is 6.7 to 8.2. New construction to meet this demand is described below.

The emphasis for the first decade will be placed on improving existing popular campgrounds. Also, those campgrounds that are non-fee and capable of a favorable cost/revenue ratio will be converted to fee status by the installation of facilities required to meet the criteria as fee sites. Selection of sites to be converted to fee status will be selective and is not expected to have a substantial displacement on the users of non-fee facilities.

A top priority will be rehabilitation of existing sites that currently need heavy maintenance. In Decade 1, an average of 10% of the existing units per year will be reconstructed, rebuilding most of the sites within the next 10 years. This equates to about 170 units, or four campgrounds per year on the Forest. After the first decade, it is expected the facilities would be in good enough condition that reconstructive maintenance could be reduced to 5% per year.

As early as the latter years of Decade 1, some new construction of developed campgrounds is anticipated, as more capacity may be needed. As many as 100 units (500 PAOT's) may be added. This will most likely be expansion of existing campgrounds rather than new site development, but several new sites are proposed late in the first decade. Refer to Appendix D for the lists of specific sites for reconstruction or improvement.

An additional emphasis will be construction/reconstruction of developed recreation facilities for the day user. Picnic sites, vistas, interpretation and nature walks are the types of recreation experiences anticipated to be in the highest demand. Planned construction for Decade 1 includes the completion of the Heather Meadows Day Use project. To increase day-use capacity, 8 to 12 day-use sites averaging 20 units each will be added in the next few decades (see Appendix D). This will result in an 800-1200 PAOT increase in capacity.

All ski areas that have expansion capacity under approved Ski Area Master Plans are expected to add development facilities. Expansion should be commensurate with expected improvements in service, and permitted on the basis of actual public need. It is anticipated that some ski areas will have base-area expansion, particularly to enhance overnight and mid-week resort opportunities.

Public information and interpretative services will be expanded in the first decade of the Plan and thereafter to respond to public demand. Expansion will encompass staffing as well as facilities, displays, equipment, and published materials. Emphasis will continue towards sharing of information services with other agencies and partnerships with private outlets where possible. Emphasis will also be given to intensifying the Forest's public outreach programs to allow certain segments of the public to become more familiar with recreation opportunities on the National Forest.

Trails

The System Trail Inventory, in Appendix E, provides direction for the management of the Forest's approximately 1383 miles of system trails.

Generally, trails will be constructed or reconstructed as needed for resource protection and to complement the objectives of the management prescriptions. When possible, through-trails will be routed away from areas of concentrated use, such as lakes and popular focal-points, to avoid unnecessary visitor encounters and environmental impacts.

Each trail will have a "primary objective" for management. While there may be other users allowed on any given trail, the trail standards and maintenance activities will reflect the standards for that primary objective and difficulty level that the trail is to be managed for (see FSH 2309.18 for standards) .

The Forest policy is to restore trail mileage disrupted by management activities or to replace them with equal miles in the same general location. The intent is to not diminish the trail miles in the local area. The cost of this will be charged to the management program causing the dislocation. Loop trails will be favored. Special emphasis will be given to the planning and construction of low-elevation, snow-free trails.

The reconstruction of existing trails will be emphasized over the construction of new trails, if budgetary constraints force prioritization.

The following sections briefly discuss specific types of trails. For further information on trails refer to the Trail Management Plan, Appendix E.

Pacific Crest National Scenic Trail. There are 96 miles of this trail located within the Mt. Baker-Snoqualmie, along the crest of the Cascade Mountains. The trail will be maintained to the standards established and meet the objectives of the "Pacific Crest National Scenic Trail (PCNST) Comprehensive Plan." Where the trail passes through wilderness, location, design, construction, and maintenance standards will be modified to the extent needed to meet the intent of the WRS class through which the trail passes.

National Recreation Trails. The Forest has four trails given national recognition for outstanding recreational values. The designated national recreation trails are shown in Table 4-2.

Table 4-2
National Recreation Trails

Trail Name and Number	Ranger District	Miles
Shadow of the Sentinels #623	Mt. Baker	0.5
Ice Caves Trail #723	Darrington	1.2
Deception Falls Nature #1078	Skykomish	0.5
Skookum Flats Trail #1194	White River	7.6

The trails listed in Table 4-3 will be proposed for National Recreation Trail status by this Plan when they are brought to a maintenance standard appropriate for this designation.

Table 4-3
Proposed National Recreation Trails

Trail Name and Number	Ranger District	Miles
Artist Ridge Trail #669	Mt. Baker	0.7
Fire and Ice Trail #684	Mt. Baker	1.0
Picture Lake Trail #735	Mt. Baker	1.0
Table Mountain #681	Mt. Baker	2.7
Heliotrope Ridge #677	Mt. Baker	3.0
Sulphur Moraine #603.1	Mt. Baker	8.0
Sauk Mountain #613	Mt. Baker	2.0
Iron Goat Trail #1074	Skykomish	7.6
Lake Serene Trail #1068	Skykomish	3.0
Franklin Falls Trail #1036	North Bend	1.0
Granite Mountain Trail #1016	North Bend	2.0
Snoqualmie Pass Wagon Rd. #1021	North Bend	1.0
Annette Lake Trail #1019	North Bend	3.6

Wilderness Trails. There are currently 580 miles of system trails in wilderness; this represents 42 percent of the total trail mileage on the Forest.

Approximately 20 miles of new trail will be constructed within wilderness during the first decade of the Plan. This construction will be for the purpose of protecting wilderness from further resource damage. The trails to be constructed are listed in Appendix E of this Plan.

Reconstruction of existing trails within wilderness is a much higher priority than new construction. Approximately 130 miles will be rebuilt in the first decade of the Plan. Trails will be reconstructed to protect the wilderness resource and to meet the objectives of the WRS class through which it passes. The second highest priority for reconstruction will be those trails where use is causing resource damage. The highest priority will be those short trail segments posing hazards to users.

Third priority for reconstruction will be relocation of long trail sections where current use is causing resource damage to adjacent areas away from the trail itself (i.e., trails routed near fragile lake shores, or through the middle of alpine meadows). Fourth priority will be reconstruction of long segments as needed to change existing trail standards to meet the objectives of the Plan (i.e., upgrading a trail for use by horses).

As user demands on wilderness continue to increase and as cross-country travel becomes more popular, user-travel routes are expected to appear within the general trailless WRS class. Upgrading will take place only if it has been determined, based on LAC standards, that a travel route is causing unacceptable resource damage, and when user awareness and other reasonable measures have failed to prevent the unacceptable impacts of the travel route.

Nonwilderness Trails. There are 803 miles of nonwilderness trails on the Forest. Of these, 425 miles are closed to motorized use. The current emphasis on hiker-only and horse trails will remain in effect.

The Plan calls for the construction of 134 miles of new trail outside of wilderness to provide alternative recreation opportunities. These trails will generally be constructed in the semi-primitive nonmotorized and roaded natural ROS areas and will meet the management objectives of those classes. Trail system planning will become an integral part of all project planning to assure continuation of a top quality trail program.

Cross-country Ski Trails. Cross-country ski trails have been developed and maintained over the years by the Forest Service and volunteers. There are approximately 129 miles of these trails. Many additional miles of skiing opportunities exist on snow-covered Forest roads. Expansion of ski touring trails is anticipated in the first decade. Groomed trails (with a pre-set track) will also expand as demand grows and funds become available.

Snowmobile Routes. The miles of roads and trails available for snowmobile use will vary from year to year based on weather conditions, wildlife habitat management, and logging activities. Over 200 miles of Forest roads and trails will be available for this use. In addition, certain areas of the Forest, such as Easton Glacier, have been identified as unroaded snowmobile areas.

Off-road Vehicle and 4x4 Routes. Four-wheel driveways are very low standard travel-ways to be used by short wheelbase vehicles. There are approximately 25.7 miles of this type of route available on the Forest. The most popular areas for this type of use are Naches Pass Wagon Road, Evans Creek ORV Area, and the Greenwater Drainage.

The Off-Road Vehicle Plan in Appendix H identifies specific road, trail, and area closures for ORV use. The ORV Plan will be updated periodically and will indicate which trails are open or closed to motorized use and any seasonal variations. Coordination with wildlife habitat management, such as seasonal closures, will be included.

Scenery

The Mt. Baker-Snoqualmie National Forest contains some of the nation's most scenic forest landscapes. Management under the Plan will help assure maintenance of this scenic resource. This subsection describes visual resource guidelines and plans, and the visual resource program.

Visual Resource Guidelines and Plans

The principles are contained in "National Forest Landscape Management, Volumes 1 and 2" and handbooks in the "Visual Management System" are to be used in managing the visual resource.

Application of visual management principles in wilderness administration is necessary for the continued maintenance of high quality scenery. Construction, rehabilitation, or reconstruction of trails or campsites require application of the "visual absorption capacity" concept to protect and maintain scenic values.

The Mather Memorial Parkway and Stevens Pass viewshed plans are available to provide further direction for management of the visual resource in those areas. Additional viewshed plans will be completed during the next decade for such areas as the Mt. Baker Highway, Baker Lake Highway, Mountain Loop Highway, and others.

Visual Resource Program

Scenic quality will be maintained and gradually improved within seven scenic viewsheds: Mather Memorial Parkway, Mountain Loop Highway, Stevens Pass Highway, North Cascades Highway, Mt. Baker Highway, Baker Lake Highway, and Snoqualmie Pass Highway. Lands within these scenic corridors will be managed at a high visual quality level in both the foreground and middleground. A total of 25,300 acres are to be managed at the retention level, and an additional 83,600 acres will be managed under the partial retention classification. On the 42,400 acres where inventoried deer and elk winter range overlaps with these scenic viewsheds, the objectives for both scenic and winter range will be met. Refer to Figures 4-1a and 4-1b for the location of these scenic corridors.

Within wilderness, 721,718 acres will be managed at the preservation VQO, while 726,000 acres outside of wilderness will be managed for a VQO of partial retention or higher. Of the 444,840 acres suitable for timber management, approximately 120,000 acres will have retention or partial retention VQO's to protect visual quality.

Outside of specified viewsheds, wilderness, and unroaded areas, scenic quality will moderately decline. Moderately to heavily altered landscapes will exist in many of the Forest's viewsheds, among them: Cascade River, Illabot Creek, Rapid River, Crystal Mountain, and Corral Pass. Table 4-4 shows the complete summary of visual management by viewshed. A total of 275,035 acres of the Forest will be managed under modification or maximum modification VQO. These lands will appear as altered or heavily altered when viewed from Forest roads. Even though alteration of the natural appearance of these lands is allowed, visual management principles will be applied, to blend alterations with natural landforms.

With the proper application of the visual management direction contained in the management prescriptions and standards and guidelines (this chapter), and visual management handbooks, the predicted visual appearance of the inventoried viewsheds is as indicated in Table 4-4.

Table 4-4 Page 1 of 2
Visual Resource Summary (Viewsheds)

Viewshed Name	Acres	EVC 2/	VMS 3/	Expected Visual Condition 1/ Year 10	Year 50
North Fork Nooksack River	10,707	S	S	S	S
Ruth Creek	1,035	S	S	M(-)4/	M(-)
Galena Creek	1,858	M	S	S(+)	S(+)
Canyon Creek	4,076	H	M	H	H
Swamp Creek	1,521	M	M	M	S(+)
Wells Creek	3,527	H	M	H	M(+)
Deadhorse/Cascade Creeks	1,288	H	M	M(+)	M(+)
Glacier Creek	2,935	S	M	M(-)	H(--)
Sulphur Creek	4,414	H	S	H	M(+)
Baker Lake	19,851	S	S	S	S
Anderson Creek	1,837	H	S	M(+)	M(+)
Middle Fork Nooksack River	1,330	H	M	M(+)	M(+)
Loomis Mountain	5,026	H	M	H	H
Shannon Creek	1,858	M	M	M	M
Sauk Mountain	465	H	S	H	H
Skagit River	802	M	S	S(+)	S(+)
Bacon Creek	2,386	H	M	H	M(+)
Cascade River	4,878	S	S	M(-)	M(-)
North Fork Cascade River	253	N	S	N	N
Sibley Creek	676	M	M	S(+)	S(+)
Vee Creek	718	M	M	H(-)	H(-)
Illabot Creek	4,794	H	M	H	H
Hilt Creek	443	H	M	M(+)	M(+)
North Fork Stillaguamish River	1,943	M	S	M(-)	H(-)
Sauk River	12,967	S	S	S	S
Whitechuck River	3,780	M	S	H(-)	H(-)
Suiattle River	8,025	M	S	M	M
French Creek	443	N	M	M(--)	M(--)
Green Mountain Pasture	1,056	H	M	M(+)	M(+)
South Fork Stillaguamish River	9,672	M	S	S(+)	S(+)
Green Mountain	10,749	H	M	H	H
Bear Lake	1,457	H	M	M(+)	M(+)
Deer Creek	1,035	M	M	S(+)	S(+)
Beaver Creek	1,183	H	M	M(+)	S(++)

Table 4-4

Viewshed Name	Acres	EVC 2/	VMS 3/	Expected Visual Condition 1/ Year 10	Expected Visual Condition 1/ Year 50
North Fork Sauk River	2,386	S	M	S	S(+)
North Fork Skykomish River	6,167	M	S	M(+)	M(+)
Skykomish River (Highway 2)	25,616	M	S	M	M
Barclay Creek	739	H	M	M(+)	M(+)
Upper North Fork Skykomish River	2,893	M	S	S(+)	N(+)
Rapid River	2,851	H	M	H	H
Beckler River	7,117	H	M	H	H
Money Creek	2,661	M	S	S(+)	S(+)
East Fork Miller River	2,788	M	S	S(+)	S(+)
Foss River	2,344	S	M	M(-)	M(-)
Lennox Creek	2,745	M	M	M	M
Maloney/Evans Creek	781	H	M	H	M(+)
Tonga Ridge	1,837	H	M	H	M(+)
Taylor River	2,893	N	S	S(-)	S(-)
Middle Fork Snoqualmie River	8,701	M	S	S(+)	S(+)
South Fork Snoqualmie River	8,468	H	S	H	M(+)
White River	5,660	M	S	S(+)	S(+)
Crystal Mountain	3,104	M	S	H(-)	H(-)
Greenwater River	2,576	M	M	H(-)	H(-)
Suntop	1,077	H	M	M(+)	M(+)
Cayada Creek	1,732	M	M	H(-)	H(-)
Corral Pass	887	M	M	H(-)	H(-)

1/ Visual Condition Codes:

N = Naturally Appearing. Area appears untouched by humans; changes are not visually evident; corresponds to VQO of preservation or retention.
S = Slightly Altered. Changes may be noticed by the average visitor but do not attract attention; natural appearance dominates. Corresponds to VQO's of retention and partial retention.
M = Moderately Altered. Changes easily noticed by average visitor and may attract attention; disturbances are apparent. Corresponds to VQO's of partial retention and modification.
H = Heavily Altered. Changes strong, obvious to average visitor; changes dominate landscape but may resemble natural patterns when viewed from 3-5 miles; disturbances are major. Corresponds to VQO's of modification and maximum modification.

2/ EVC = Existing Visual Condition. Many of the acres currently in a heavily altered condition will remain that way for several decades. A viewshed's EVC rating or future visual condition (FVC) is an average for the seen area.
3/ VMS = Visual Management System. The expected visual condition if attempts to achieve the inventoried VQO's were implemented.
4/ The (+) and (-) indicate positive or negative change in visual quality compared to the existing visual condition (EVC).

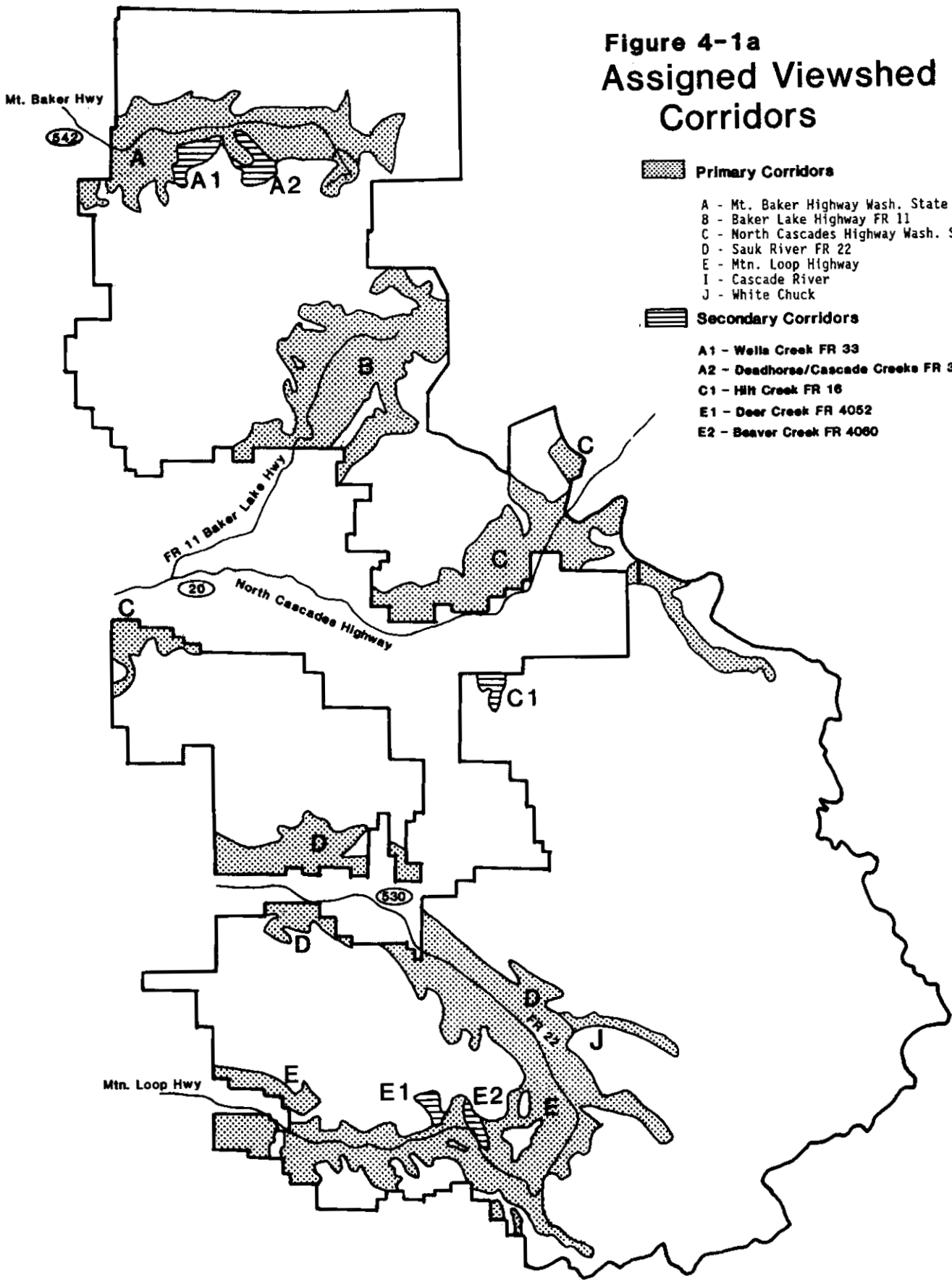


Figure 4-1a
Assigned Viewshed Corridors

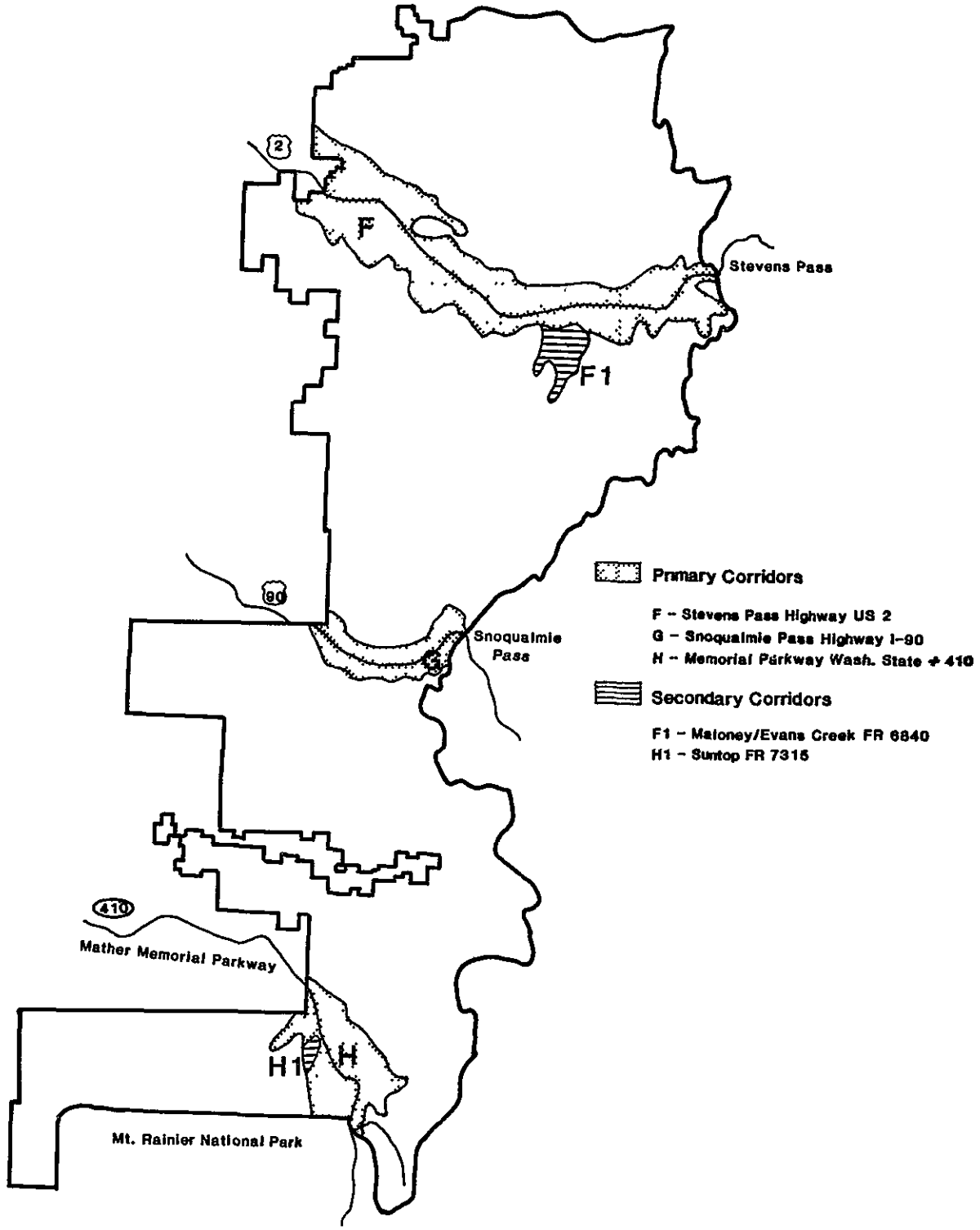
Primary Corridors

A - Mt. Baker Highway Wash. State #542
B - Baker Lake Highway FR 11
C - North Cascades Highway Wash. State #20
D - Sauk River FR 22
E - Mtn. Loop Highway
I - Cascade River
J - White Chuck

Secondary Corridors

A1 - Wells Creek FR 33
A2 - Deadhorse/Cascade Creeks FR 37
C1 - Hilt Creek FR 16
E1 - Deer Creek FR 4052
E2 - Beaver Creek FR 4060

Figure 4-1b
Assigned Viewshed Corridors



National Recreation Area

Management of the Mt. Baker National Recreation Area will focus on providing snowmobile and cross-country skiing opportunities during the winter, and non-motorized recreational uses during the summer season.

During the winter, snowmobile access will be provided on road #13 to Schrieber's Meadow, into upper Rocky and upper Sulphur Creeks, the upper Railroad Grade, Metcalfe Moraine, and lower Easton Glacier. A new road being developed by a Federal Regulatory Commission (FERC) applicant will also access this area. The Forest will work with the Washington State Sno-Park Program and various user groups to manage the winter use in this area. Snowmobile and cross-country ski traffic will be separated where possible, by such methods as providing an alternate access route to Schrieber's Meadow and surrounding alpine areas.

Summer use will focus on hiker and horse use. Construction of the Easton Crossing trail segment will complete a loop trail system for overnight use. Horse use will be permitted on the western edge of the area.

Wild and Scenic Rivers

During implementation of the Plan, steps will be taken to recommend for formal designation the river segments shown below, to the recommended classifications. This recommendation is a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, Secretary of Agriculture, and the President of the United States. The Congress has reserved the authority to make final decisions on designation of rivers as part of the National Wild and Scenic Rivers System. Until Congressional action, the values contributing to a rivers' particular classification will be protected.

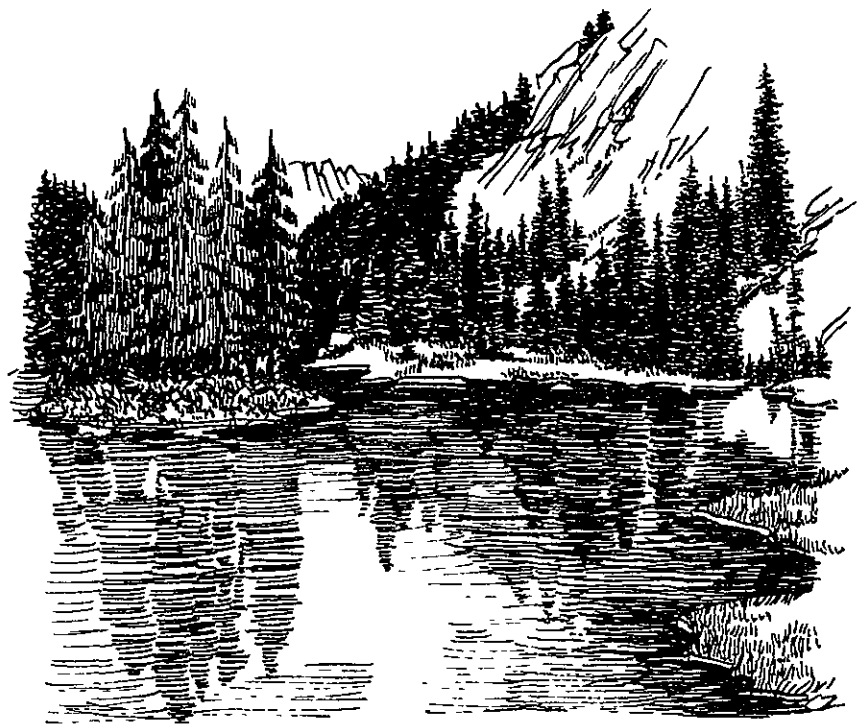


Table 4-5 Page 1 of 3
Recommended Wild and Scenic Rivers

River	Segment	Recommended Classification	Miles
North Fork Nooksack	* Headwaters in the North Cascades National Park to the Mt. Baker Wilderness boundary.	Wild	3.5
	* Mt. Baker Wilderness Boundary to Nooksack Falls diversion dam.	Scenic	9.9
	* Nooksack Falls diversion dam to Nooksack Falls power plant.	Recreation	1.6
	* Nooksack Falls power plant to the fish hatchery near Kendall.	Scenic	18.8
	* Fish hatchery to the confluence with the South Fork Nooksack.	Recreation	9.5
South Fork Nooksack	* Headwaters of the South Fork Nooksack to Bell Creek.	Wild	2.3
	* Bell Creek to the Mt. Baker-Snoqualmie National Forest boundary.	Scenic	4.3
Bell Creek	* Bell Creek headwaters on Loomis Mtn to confluence with South Fork Nooksack.	Scenic	3.0
Baker River	* Headwaters in North Cascades National Park near Perfect Pass to Blum Creek.	Wild	11.2
	* Blum Creek to Baker Lake.	Scenic	2.1
Noisy Creek	* Headwaters on Bacon Creek to Baker Lake.	Wild	6.1
Diobsud Creek	* Headwaters on Mt. Watson to the south section line of Section 24.	Wild	8.3
	* South section line of Section 24 to the confluence with the Skagit River.	Recreation	2.2
Illabot Creek	* Headwaters to Glacier Peak Wilderness boundary.	Wild	4.3
	* Glacier Peak Wilderness boundary to confluence with Skagit River.	Recreation	11.0
Buck Creek	* Headwaters to Glacier Peak Wilderness boundary.	Wild	10.1
	* Glacier Peak Wilderness boundary to the confluence with the Suiattle River.	Scenic	1.0

Table 4-5 Page 2 of 3

Downey Creek	* Headwaters on Lizard Mtn. to Glacier Peak Wilderness boundary.	Wild	10.0
	* Glacier Peak Wilderness boundary to the confluence with the Suiattle River.	Scenic	.8
White Chuck River	* Headwaters to Glacier Peak Wilderness boundary.	Wild	10.5
	* Glacier Peak Wilderness boundary to confluence with Sauk River.	Recreation	12.0
North Fork Sauk River	* Headwaters to the boundary of the designated Skagit Wild and Scenic River.	Wild	9.2
Boulder River	* Headwaters to Boulder River Wilderness boundary.	Wild	9.0
	* Boulder River Wilderness boundary to confluence with NF Stillaguamish River.	Recreation	4.0
South Fork Stillaguamish	* Headwaters between Morning Star and Lewis Peaks to Canyon Creek.	Scenic	36.6
	* Canyon Creek to the confluence with North Fork Stillaguamish River.	Recreation	15.9
North Fork Skykomish	* Headwaters to the end of FS Road #63.	Wild	8.2
	* Road end to Troublesome Creek.	Scenic	8.4
	* Troublesome Creek to confluence with South Fork Skykomish River.	Recreation	12.0
Troublesome Creek	* Headwaters at Blanca Lake to FS Rd #63.	Wild	4.4
	* FS Road #63 to the confluence with the North Fork Skykomish River.	Scenic	0.1
West Cady Creek	* Headwaters to bridge in Sec. 21.	Wild	4.8
	* Bridge to confluence with North Fork Skykomish River.	Recreation	2.7
South Fork Skykomish	* Confluence with Tye and Foss Rivers to the confluence with the Snohomish.	Recreation	28.3
Tye River	* Headwaters of the Tye River to the confluence with the South Fork Skykomish and Foss River.	Recreation	14.5
Miller River (to fork)	* Miller River from the confluence of the East and West Forks of the Miller River to the confluence with the South Fork Skykomish River.	Scenic	3.7
West Fork Miller River	* Headwaters to the Alpine Lakes Wilderness boundary.	Wild	2.1
	* Alpine Lakes Wilderness boundary to the confluence with the East Fork Miller River.	Scenic	4.2

Table 4-5

East Fork Miller River	* Lake Dorothy to the Alpine Lakes Wilderness boundary.	Wild	0.8
	* Alpine Lakes Wilderness boundary to the confluence with the West Fork Miller River.	Scenic	6.0
Foss River (to fork)	* Confluence of East and West forks of Foss River to confluence with Tye River.	Recreation	4.4
West Fork Foss River	* Headwaters at Delta Lake to the Alpine Lakes Wilderness boundary.	Wild	3.1
	* Alpine Lakes Wilderness boundary to the confluence with the East Fork Foss River.	Recreation	1.5
East Fork Foss River	* Headwaters at Lynch Glacier to the Alpine Lakes Wilderness boundary.	Wild	6.7
	* Alpine Lakes Wilderness boundary to the confluence with the West Fork Foss River.	Recreation	1.2
Deception Creek	* Headwaters at Trico Lake to the Alpine Lakes Wilderness boundary.	Wild	9.8
	* Alpine Lakes Wilderness boundary to the confluence with the Tye River.	Recreation	0.5
NF Snoqualmie River	* Wagner Bridge to confluence with Middle Fork Snoqualmie River.	Scenic	12.1
MF Snoqualmie River	* Headwaters near La Bohn Gap to the Alpine Lakes Wilderness boundary.	Wild	6.4
	* Alpine Lakes Wilderness boundary to the confluence with the Taylor River.	Scenic	13.2
	* Taylor River confluence to near the community of Tanner.	Recreation	15.9
	* Tanner to the confluence with the North Fork Snoqualmie River.	Recreation	4.2
Taylor River	* Snoqualmie Lake to the Alpine Lakes Wilderness boundary.	Wild	1.2
	* Alpine Lakes Wilderness boundary to Quartz Creek Road.	Scenic	5.4
	* Quartz Creek Road to the confluence with Middle Fork Snoqualmie River.	Recreation	1.6
Pratt River	* Headwaters at Melakwa Lake to the Alpine Lakes Wilderness boundary.	Wild	1.6
	* Alpine Lakes Wilderness boundary to confluence with MF Snoqualmie River.	Recreation	7.9
White River	* Headwaters at Emmons Glacier to Huckleberry Creek.	Scenic	20.0
	* Huckleberry Creek to the confluence with the Clearwater River.	Recreation	17.7

It is also the responsibility of the Forest to protect the "outstandingly remarkable" values on those rivers which where eligible for designation but not selected as suitable in the preferred alternative. Refer to Appendix E of the FEIS for further details.

Sensitivity Levels of Wild and Scenic River Corridors:

Table 4-6, shows the sensitivity levels for the wild and scenic river corridors. This table is used in conjunction with the guidelines contained under Forest Wide Standards and Guidelines for Visual Resources, and guides visual resource management in designated wild and scenic river corridors

Table 4-6
SENSITIVITY LEVEL - WILD AND SCENIC RIVERS

River Name	Sensitivity Level	Suitable for Designation
Silesia Creek	2/3	No
North Fork Nooksack	1	Yes
Wells Creek	2/3	No
Middle Fork Nooksack	2/3	No
South Fork Nooksack	2/3	Yes
Bell Creek	2/3	Yes
Baker River	1	Yes
Noisy Creek	2/3	Yes
Diobsud Creek	1	Yes
Illabot Creek	2/3	Yes
Buck Creek	2/3	Yes
Downey Creek	2/3	Yes
White Chuck River	1	Yes
North Fork Sauk River Extension	2/3	Yes
South Fork Sauk River	1	No
North Fork Stillaguamish	2/3	No
North Branch	2/3	No
Deer Creek	2/3	No
Boulder River	2/3	Yes
South Fork Stillaguamish	1	Yes
Canyon Creek (to fork)	2/3	No
South Fork Canyon Creek	2/3	No
South Fork Skykomish	1	Yes
North Fork Skykomish	1	Yes
Troublesome Creek	2/3	Yes
West Cady Creek	2/3	Yes
Tye River	1	Yes
Miller River (to fork)	1	Yes
West Fork Miller River	1	Yes
East Fork Miller River	1	Yes
Foss River (to fork)	1	Yes
West Fork Foss River	1	Yes
East Fork Foss River	1	Yes
Beckler River	2/3	No

Table 4-6
SENSITIVITY LEVEL - WILD AND SCENIC RIVERS

River Name	Sensitivity Level	Suitable for Designation
Rapid River	2/3	No
Deception Creek	2/3	Yes
South Fork Tolt River	2/3	No
North Fork Snoqualmie River	1	Yes
Lennox Creek	2/3	No
Middle Fork Snoqualmie	1	Yes
Taylor River	1	Yes
Pratt River	1	Yes
South Fork Snoqualmie River	1	No
Carbon River	2/3	No
White River	1	Yes
Clearwater River	2/3	No
Greenwater River	2/3	No

American Indian Religious and Cultural Uses

The 1981 "Inventory of Native American Religious Use, Practices, Localities and Resources" (Blukis Onat and Hollenbeck 1981) resulted in the identification of over 300 sites and approximately 450,000 acres of significance to 15 different Indian tribes. Five categories of use areas and sites were mapped and described in the Inventory: (1) spirit quest sites; (2) legend sites; (3) cedar areas; (4) ceremonial flora areas; and (5) archaeological sites and cemeteries.

Archaeological sites and cemeteries are addressed in the following resource summary, "Archaeological and Historic Properties." All cemeteries will be protected from development impacts.

As a minimum, the Forest will consult with affected Tribes when proposed ground-disturbing projects fall within inventoried use areas or sites, as noted in the Forest-wide Standards and Guidelines. Appropriate mitigation measures will be developed by the Forest Service and Tribal religious leaders.

While over 450,000 acres were identified as sites and areas important for religious and cultural practices, the Inventory stressed that religious and cultural significance was not limited to the identified areas. Additional areas, yet to be specifically identified, contain the potential environmental conditions suitable for religious practices and use. Suitable environmental conditions include unmodified streams, old-growth forest, cedar, ceremonial plants, the qualities of isolation, privacy, and purity of the environment. Scheduled studies will refine the data in the 1981 Inventory.

Archaeological and Historic Properties

The emphasis of the cultural resource program will be 1) continued support of Forest development activities in compliance with historic preservation law; 2) improvement of the data base for management of the resources; and 3) increasing the protection and interpretation of archaeological and historical sites.

Together with areas used by American Indians for religious purposes, these sites are called "cultural resources". A "Cultural Resources Overview" has recently been completed for the Forest. It summarizes knowledge of the prehistoric, ethnographic, and historic resources and is the basis for planning future management actions. These fall into two categories: inventory/evaluation and protection/interpretation.

The prehistory of the forested uplands of western Washington is little known; much is merely an extrapolation from adjacent geographic areas. Within the Forest, only 20 sites have been adequately recorded, although at least 80 more have been reported. A major obstacle to the discovery of prehistoric sites on the Forest is the heavy vegetative cover, the low visibility of the ground surface, and the ephemeral nature of many of the prehistoric remains. New approaches must be developed to effectively and reliably inventory the Forest for prehistoric sites.

The ethnographic use of the Forest provides some clues as to expected land and resource use patterns, site locations, and interpretations of sites. It also provides some background on the history of the local Indian groups, many of whom still use the Forest for religious and cultural purposes.

Through records searches, historic sites can be more easily predicted and located. About 250 have been formally recorded, and another 750 have been reported on the Forest. The historic overview sets forth major themes of Forest history including: transportation development, mining, logging, Forest Service administration, recreation, and water development. This historic context provides for the identification of many areas which could be targeted for inventory based on a thematic or district approach.

The historic district approach has been used for the Stevens Pass Historic District and may be appropriate for 14 distinct mining areas, 6 transportation areas, and 8 logging areas. Specific examples include the Snoqualmie Pass Wagon Road, the Northern Pacific Railroad corridor, the Mt. Baker, Silverton, or Index Mining Districts, and logging in the Stillaguamish and Sauk River drainages. Thematic studies already exist for Depression-era administrative buildings and fire lookouts, and may be appropriate for timber claim cabins, native allotments, and water developments.

Inventory and Evaluation

Cultural resource inventories will continue to be undertaken in compliance with historic preservation law and regulations; that is, to allow assessment of the effects of other activities (e.g. timber harvest) on cultural resources. In addition, it will be necessary to undertake inventories not tied to these activities. In both cases, it will be necessary to develop techniques to reliably identify prehistoric sites. This may require more intensive monitoring during road construction and timber harvest. It may also require more systemized use of subsurface probing to test for prehistoric site areas.

The Forest is currently developing an inventory plan which will outline recommendations for survey of prehistoric sites. All sites located during project-related survey will be documented to Regional standards.

Approximately 12,000 acres of the Forest will be inventoried each year, in the course of compliance inventories. In addition, about 15,000 acres of inventory will be necessary on the areas of the Forest not affected by other activities during the life of this Plan. Such inventory is needed to adequately understand the nature and distribution of the resource and eventually obtain a complete cultural resource inventory of the Forest.

There is a backlog of 750 known sites which have not yet been adequately recorded. These sites will be recorded and evaluated using a thematic or district approach. Highest priority will be assigned to those areas targeted for timber harvest and road construction over the next 10 years. However, other forces which cause deterioration to cultural resources, such as natural weathering or vandalism, cannot be ignored. For instance, in some of the heavily used wilderness areas such as Alpine Lakes and Mt. Baker, specific mining districts will be targeted for inventory. The goal will be to record and evaluate 70 sites or 2 districts or thematic groups per year.

There will be an evaluation of significance (determination of eligibility) of all cultural resources before the implementation of any activity may affect them. The evaluation of significance is the basis on which sites are selected for further investigation, preservation and protection, or interpretation. Evaluations are also critical in making decisions to permit alteration or destruction of the cultural resource. Sites will be treated as individual properties, thematic groups, or historic districts. The program emphasis will be away from evaluation of single sites and toward evaluation within a broader historic context and geographic area.

Of the 25 known prehistoric archeological sites most, if not all, are likely to be eligible to the National Register. Those located in project areas or experiencing deterioration will require test excavations as part of formal evaluations. In some cases, full-scale data recovery in the form of extensive excavations may be necessary. The need for this level of cultural resource work is expected to be greatest on the White River Ranger District.

There are 15 historic sites and buildings on the Forest which have already been determined eligible to the National Register. At this time, management plans have not been developed for many of these resources. Such management plans should identify maintenance needs and provide for appropriate use and interpretation. Top priorities for management plans include the Stevens Pass Historic District, Naches Pass Trail, and fire lookouts. The Stevens Pass Historic District and the Naches Pass Trail are shared with the Wenatchee National Forest and these plans are expected to be joint efforts.

Protection and Interpretation

As in the past, action will be taken to avoid or mitigate any adverse effects on cultural resources resulting from other Forest activities. All actions affecting cultural resources will be implemented only after consultation with the State Historic Preservation Officer and Advisory Council on Historic Preservation and other interested parties such as American Indian tribes. As determined in the consultation process, projects may be re-designed to avoid sites, important data may be recovered, or the sites recorded to the standards of the Historic American Buildings Survey.

As a result of performing inventories not tied to specific projects, implementation of the Plan will result in an assessment of the effects of such impacts as erosion, structural decay, and vandalism on cultural resources. Measures such as stabilization or patrol will be instituted to protect the resources from these impacts.

Implementation of this Plan will result in an increase in interpretation of cultural resources. Interpretation makes their scientific, historical, aesthetic, and social values more accessible to the public. Interpretive opportunities will be identified during the process of evaluating the significance of cultural resources. Several resources, including the Stevens Pass Historic District, administrative sites and lookouts are already known to have high interpretive potential. Interpretive facilities, publications, and videos will be developed for the resources judged to have the highest level of interpretive potential.

Wilderness

The 721,718 acres of wilderness on the Mt. Baker-Snoqualmie National Forest will be managed to preserve the areas' wilderness character for the use and enjoyment of visitors, and administered in a manner consistent with the Wilderness Act of 1964.

The physical, social, and managerial settings within wilderness will be managed to meet standards set under Limits of Acceptable Change (LAC's) in the wilderness recreation spectrum (WRS). Five zones are established under the WRS, listed in the table below. Using this system, an average capacity for wilderness visitor use has been estimated. Refer to Chapter II, Chapter III, and Appendix B of the FEIS for more discussion on capacity. The acres and capacity of each zone are shown in Table 4-7.

Table 4-7
Wilderness Recreation Spectrum

Zone	Acres	RVD's
Transition	15,078	226,170
Trailed	49,015	183,806
General Trailless	457,000	114,250
Dedicated Trailless	207,930	14,945
Special Area	9,017	Not Estimated
Total	721,716	539,171

During Plan implementation, wilderness managers must seek to gain a better understanding of factors affecting the wilderness resource and the users' experience. This requires that the capacity of specific sites within the WRS classes to absorb use, be monitored to adjust capacities to meet the objectives of the Plan, and to use indirect management tools (user education) and direct management tools (mandatory permits or road closures outside wilderness) to regulate use.

Specific wilderness management direction is contained in the Forest-wide Standards and Guidelines, and MA prescriptions. The overall wilderness management goal will be to reduce or eliminate the adverse effects associated with human use, when use approaches or exceeds the established LAC. Specific management actions will be undertaken at overused sites where LAC's are now exceeded, or where the level of use or impacts is approaching levels specified for that WRS class. The Wilderness Rehabilitation Schedule is in Appendix F.

Several areas within wilderness presenting unique management problems, such as the existence of structures, RNA's, and a popular climbing route, are assigned to the special area WRS class. The intent of this class is to allow changes in management guidelines for unique situations; areas do not qualify for this class for administrative convenience in dealing with overuse. The historic lookouts at Winchester Mountain, Park Butte, Miners Ridge, Three Fingers, Green Mountain and Granite Mountain will be allowed to remain as non-conforming uses. The Coleman Glacier Climbing Route on Mt. Baker and will have special LAC's in recognition of the unique opportunities present. An interdisciplinary team will examine the recreational use of Mt. Baker and recommend further refinements in these guidelines. The USGS Glacial Research Station in the Glacier Peak Wilderness and authorized electronic sites in wilderness will continue to operate under special use permit.

Approximately 20 miles of new trail will be built within wilderness in the first decade of the Plan. This construction will be to protect the wilderness resource where overuse is occurring. In total 73 miles of new trails are proposed within the wilderness. In addition, necessary trail access will be reconstructed. Refer to the Trail resource summary in this chapter and to the Trail Management Plan in Appendix E.

There are several large areas without trail access where cross-country trips, as long as a week, are possible. They provide for a pristine wilderness experience but generally occur in extremely fragile alpine areas that are vulnerable to overuse. The intent is to manage these dedicated trailless areas to prevent overuse. Already, hiker-created trails are appearing, favorite campspots are being denuded and the opportunities for solitude are diminishing. If not managed, these cross-country routes will lead to the establishment of new trails, greatly reducing the trailless opportunity. This will be the most difficult of the wilderness classes to manage, for the manager must attempt to allow continued use in these areas without any resulting physical impacts.

Standards and Guidelines permit using some naturally occurring fires (i.e. lightning caused) to accomplish wilderness vegetation management objectives such as maintaining vegetation diversity and allowing natural processes to prevail. The parameters under which these fires will be permitted to burn will be closely monitored and suppression actions will be taken immediately on those fires that exceed prescriptions. Under these guidelines it is expected that most fires will be less than 10 acres in size through it is possible that once every 20 years or so an individual fire may approach 1000 acres in size. It is expected that approximately 75 acres per year will be burned where naturally occurring fires are used to accomplish wilderness vegetation management objectives. No areas have been identified where planned, human induced, prescribed burning is needed to modify fuel accumulations to meet wilderness fire protection needs.

The LAC's will act as monitoring guidelines for the physical and social settings within the wilderness. Periodic monitoring of these indicators will assist in preservation of the pristine attributes of wilderness.

Watershed

The watershed program on the Mt. Baker-Snoqualmie National Forest provides the means to obtain protection, maintenance, and rehabilitation of soil and water resources. It provides leadership in defining the allowable level of manipulation of the watershed environment. The watershed program provides support to other functional areas. It initiates and is responsive to changes in Forest needs, goals, and direction, and public issues. This program will be carried out through various activities that have been determined to have a high priority for accomplishment. These activities are described below.

Close involvement to provide support and advice to ground-disturbing resource management will be done to help protect the soil and water resources. The primary involvement will be with the timber program. Timing of support will be tied to the development of individual timber sales. The program will involve initial consultation on inventory and needs of the soil and water resources, through evaluation of management practices as the timber sale is completed. The level of involvement will vary depending upon the complexity of the project, with the greatest involvement occurring with complex sales that have potential for resource damage.

Consultation and involvement will also occur with management activities other than timber sales when ground-disturbing activities are proposed. These would include, but are not limited to: fisheries, fuels, recreation development, engineering, and seed orchard and fertilizer trials. Schedules for many of these resource projects are found in the appendices.

The application of Forest-wide Standards and Guidelines, Best Management Practices (site-specific), and meeting management requirements for water quality and riparian areas will ensure at least minimal protection over the entire Forest, with increased protection in some areas and within several Management Areas, such as (MA 5) Potential Wild and Scenic River,(MA 6) Skagit Wild and Scenic River, and (MA 13) Watershed, Wildlife, and Fisheries Emphasis in Riparian Areas.

Emphasis will be placed on the protection of riparian areas so that their integrity is maintained. This involves working with other resource personnel in the design and application of riparian area protection techniques. Training will be provided to resource personnel in riparian area design.

Inventories for watershed rehabilitation needs will be conducted first in the sensitive watersheds. Identified projects will be funded by available sources including P&M and KV. It is expected that about 35 acres per year will be rehabilitated.

Monitoring of the effects of the Plan will be done to determine if changes are occurring to the soil and water resources. Details of the "Monitoring and Evaluation Plan" can be found in Chapter 5. The objectives of soil and water monitoring are to determine if standards and guidelines have been met, and to assess their adequacy and make changes if necessary. Monitoring will be done at several levels of intensity; the most common method will be end-product reviews, which are highly cost and time effective. More intensive monitoring will be done as needs arise. A feedback loop will be utilized to help improve the design and implementation of future projects.

Coordination regarding management concerns will continue with the involved municipalities of the municipal watersheds on the Forest. Coordination will also continue with the public basin groups, especially for the large sensitive watersheds, where there is a high potential for resource impact and serious political implications.

Air

Application of standards and guidelines, and management prescriptions (this chapter) associated with the programs and activities included in the Plan will assure that the effects on long-term air quality are positive and supportive of State and national goals to improve air quality of the Region. All management activities that generate smoke will be executed in strict conformance with the Washington State Implementation Plan, which restricts the quantity and timing of activities to minimize impacts on human health and quality of life.

The overall objective of the prescribed burning program is to limit it's application to accomplishment of those objectives that can be accomplished no other way. As an example, on-site burning of logging residue should be the last choice as a fuel treatment method. The Forest will reduce emissions from prescribed burning consistent with State goals for 1990.

The effects of the various management activities involving prescribed burning on localized air quality will be monitored based on the production of total suspended particulates (TSP) emissions. The level of TSP emission produced will be calculated annually (refer to the monitoring plan, Chapter 5) based on the fuel moisture, time of year, and total tons of available fuel consumed at the time of burning.

In addition to the forest management activities that may cause air quality impacts over the forest, the Federal Clean Air Act requires that Air Quality Related Values (AQRV's) of the forest be protected from all off Forest sources of air pollution. Monitoring activities will establish baseline conditions for these values and the Prevention of Significant Deterioration provisions of the Clean Air Act provide the mechanism for the forest to review and evaluate all planned activities that have potential to impact the AQRV's of the forest.

Wildlife

This section contains two parts: a brief description of the wildlife program; and a summary of how the wildlife resource and activities will be managed under the Plan, including descriptions of the estimated outputs.

Wildlife Program

Primary emphasis of the wildlife program will be habitat improvement and coordination with other resource management, especially timber, road, and recreation, to improve or maintain wildlife habitat.

Standards, guidelines, and prescriptions for wildlife reflect the integration of wildlife habitat requirements and other Forest activities, assuring that at least minimum acceptable habitat conditions are provided for Management Indicator Species (MIS) and their represented species. Forest-wide standards and guidelines address general wildlife management as well as protection of special habitats, particularly breeding and wintering areas, from ground-disturbing activities. Animals using these special habitats are protected from disturbance during breeding seasons and wintering periods.

The Forest Management Indicator Species are:

- Bald eagle, American peregrine falcon, gray wolf and grizzly bear (T&E wildlife habitat MIS);
- Mountain goat (mountain goat habitat MIS);
- Northern spotted owl (old-growth habitat MIS);
- Pine Marten and pileated woodpecker (mature and old-growth habitat MIS);
- Primary cavity excavators (snag and downed log MIS).

Management prescriptions with major emphasis on meeting wildlife objectives are:

- MA 11 - with emphasis on old-growth wildlife habitat, using the northern spotted owl as the MIS;
- MA 12 - with emphasis on mature and old-growth wildlife habitats, using the pine marten and pileated woodpecker as MIS;
- MA 14 - with emphasis on deer and elk winter range;
- MA 15 - with emphasis on mountain goat habitat; and

- MA 16A, 16B, 16C, and 16D - with emphasis on T&E wildlife habitat for bald eagle, grizzly bear, American peregrine falcon, and gray wolf.

The habitat and wildlife characteristics and habitat relationships described in the Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington (Brown 1985) and other available literature will be used in evaluating habitat, identifying opportunities, developing and testing habitat and use assumptions, and assessing direct, indirect, and cumulative effects.

Inventories and data gathering will be carried out to update existing information, provide baseline data for monitoring, and develop habitat relationship models. Habitat inventories, wildlife use surveys, and development of habitat analysis systems will be coordinated with WDW, USFWS, and other agencies or studies. A list of information and research needs is found at the end of Chapter 2.

Monitoring is a major part of implementing the Plan. Details of the monitoring actions for wildlife are in Chapter 5. Management indicator species and all T&E wildlife will be monitored to ensure that assumptions concerning the effects of management activities on wildlife habitat and populations are appropriate. Evaluation of estimated outputs and expected conditions in the FEIS will determine if wildlife habitat and population trends are as planned, and will form the basis for adjusting Plan direction when appropriate.

The Forest will coordinate with State, local, and other Federal agencies, basin planning groups, and other concerned groups regarding management programs and activities. Activities involving Federally threatened or endangered wildlife species will be coordinated with the USFWS.

Wildlife Activities and Outputs

The goals and objectives of the wildlife program will be carried out through various activities to provide and manage habitat, resulting in the estimated Forest-wide wildlife population levels shown in Table 4-1. The production of Wildlife-Fish User Days (WFUD's) is a secondary output related to both wildlife populations and demand for consumptive (hunting/trapping) and nonconsumptive (viewing, nature study, etc.) wildlife uses.

The following activities, described below, have a high priority for accomplishment: (1) coordination; (2) T&E wildlife habitat management; (3) big game habitat management; (4) mature and old-growth habitat, snag, and riparian area management; (5) habitat improvement; and (6) education.

Coordination. Coordination will be an on-going process to ensure that wildlife habitat needs are incorporated as appropriate into all projects. Extensive coordination of wildlife objectives and standards and guidelines with other resources will be emphasized, especially for ground-disturbing activities such as timber harvest, road construction, mining, small hydroelectric developments, and recreation developments. This includes evaluating habitat condition, quantity, and arrangement and the opportunities, effects, and mitigations relating to the proposed management activity. Coordination of wildlife Standards and Guidelines with recreational use management will be an important and growing priority, as high recreational use levels increase even further. Pre-project coordination and planning will be done as well as utilizing KV funds for post-project mitigation measures and habitat improvement.

T&E Wildlife Habitat Management. The Forest will participate in maintaining or reestablishing four nesting pairs of bald eagles (Federally threatened) to meet the "Final Pacific States Bald Eagle Recovery Plan" (1988) objectives. Assigned habitat (with the associated standards and guidelines) and improvements (where appropriate) will be carried out for one existing nest site, three recovery nest sites, communal roosts, and foraging areas. Recovery nest sites, and communal roost and foraging areas will be identified and the use of all existing and recovery areas will be monitored.

Habitat inventories will be completed for the American peregrine falcon (Federally endangered) and for the grizzly bear (Federally threatened). All important or critical habitat will be protected or improved to meet recovery objectives of the "Pacific Coast Recovery Plan for the American Peregrine Falcon" (1982) and the "Grizzly Bear Recovery Plan" (1982). Occasional and/or transient use of Forest lands by peregrine falcon and grizzly bear will be documented. Gray wolf (Federally endangered) sightings will be evaluated and consulted on with the USFWS. The Forest Plan will be modified as needed to support new recovery objectives in revisions of these recovery plans, or as new recovery plans become available.

The Forest has initiated consultation on the Forest Plan with the USDI Fish and Wildlife Service. A biological evaluation of the effects of the Plan on threatened and endangered species is on file at the Supervisor's Office.

Big Game Habitat Management. Selected big game winter ranges will be managed to provide high quality cover and forage conditions.

The habitat capability of deer and elk winter range will increase as a result of improved winter range where it is assigned to MA 14, and where inventoried winter range overlaps with compatible MA's, particularly MA's 1D, 2AB, 4, 5AB, 6, 15, and 27. In these areas, timber harvest methods will be used to develop the desired cover and forage relationships (ratio, size, and arrangement) where appropriate. About 240 acres/year of seeding and fertilization will be done to improve forage during the first decade. Road density will average no more than two miles per square mile in winter range areas. Thermal and optimal cover will be retained in MA 14.

Mountain goat populations will benefit from improved winter range where it is assigned to MA 15. In these areas, about 200 acres/year of seeding and fertilization for forage production may be done in the first decade. Prescribed burning may be used if determined to be ecologically acceptable to the specific site, beneficial to goat forage production, and compatible with the areas management prescription. Road density will average no more than two miles per square mile and no new roads will be built in Goat MR areas. Thermal and optimal cover will be retained in MA 15. Overall mountain goat habitat capability and populations are expected to decrease due to decreased thermal cover during this same period. Emphasis will be placed on inventory of actual goat use areas, determining goat populations, and investigating causes for the apparent decline in goat numbers. These activities will be done in conjunction with the Washington Department of Wildlife.

Deer, elk, and mountain goat summer ranges overlap with winter ranges in some cases, or are assigned to other resource management areas, with protection for special areas, e.g., fawning, calving, and kidding areas. A minimal level of big game summer range maintenance is provided through application of Regional harvest dispersion constraints. Summering populations of deer and elk fluctuate slightly due to the effect of Forest management activities as well as habitat conditions on off-Forest winter ranges that support 50% or more of the summering populations.

The primary emphasis of big game habitat inventories will be to update deer and elk winter range boundaries and to complete mountain goat habitat boundaries. Secondary emphasis will be on identifying summer and transition ranges and special areas, i.e., fawning, calving, and kidding areas, wallows, and travel corridors.

Mature and Old-growth Habitat, Snag, and Riparian Area Management. Old-growth and mature forests can provide habitat for the northern spotted owl, pine marten, pileated woodpecker, deer, elk, and mountain goat, depending on each wildlife species' specific old-growth habitat needs or preferences. Big game old-growth needs (thermal and optimal cover) are discussed above. Elevational requirements and vegetative type affect how much of the old growth may be suitable habitat for spotted owls. Fragmentation of the mature and old-growth habitats by timber harvest units is expected to reduce use by these animals, especially the spotted owl.

At the end of the first decade, there will be about 624,660 acres of old growth habitat remaining, including large areas of old-growth in wilderness, research natural areas, dispersed recreation areas of the Alpine Lakes Area management unit, and unsuited timber lands. This acreage will decrease overall, to 535,100 acres, by the end of the fifth decade.

Spotted owl, pine marten, and pileated woodpecker populations will decline in the next five decades, due to the continuous decrease in old-growth habitat from harvesting and environmental factors such as windthrow. Populations will remain viable during this period.

Where green trees are left in timber harvest units, without dead trees also being retained, snags will be created on suitable lands to maintain at least 40 percent of the population potential of primary cavity excavators. Dead and down logs will be left in project areas, using the guides from Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington (Brown 1985) to meet Forest wide Standards and Guidelines for diversity. Existing snags and down logs and future, naturally occurring snags and logs, will be retained in MA's without timber harvest.

Management Area 13 protects and manages riparian areas important to a large number and variety of wildlife and fish species. Deer and elk habitat often occurs in these areas, as well as habitat for many mature and old-growth wildlife species. Habitat for primary cavity excavators will be managed at or above the 80% population potential level in riparian areas. Nest boxes and platforms for such species as wood duck, common loon, and osprey will be installed in riparian areas.

Habitat Improvement. Habitat improvement includes developments and habitat manipulation that improve the quantity, quality, and/or arrangement of wildlife habitat. Improvement projects to benefit wildlife are listed and scheduled in Appendix C. Habitat improvement will be designed to maintain or increase wildlife populations such as T&E wildlife, big game, and others. Also, habitat improvement will be used to mitigate those management activities incompatible with the wildlife species of concern in specific areas. Some projects are dependent on additional surveys and inventories to better define how and where to apply needed habitat improvement. Examples are mountain goat projects, where site-specific surveys are needed first.

Improvements include those mentioned above as well as road closures for T&E wildlife and MIS, and other appropriate developments or habitat manipulation.

Education. A relatively new and growing emphasis for the wildlife program will be the development of a public education program; its emphasis will be educating the public about opportunities on the Forest for viewing, studying and photographing wildlife and their habitats. Public interest in these activities is high and growing at a rapid rate. Cooperative efforts aimed at inventories, monitoring, and habitat enhancement and protection will be forged with a wide variety of citizen user groups.

Fish

This section summarizes the fisheries program and how the fisheries resource and activities will be managed under the Plan, including descriptions of the resulting outputs.

Fisheries Program

Maintenance, protection, mitigation or restoration, and enhancement of the fishery habitat capability will be objectives in the fishery resource area. This will be accomplished by a mixture of land allocations and standards and guidelines at the Forest Plan level, and by best management practices (BMP's) and habitat improvement capitol investment at the project level.

Anadromous fish management indicator species include chinook, coho, pink, and chum salmon, as well as steelhead and sea-run cutthroat trout. Resident fish MIS include rainbow, cutthroat, and bull trout.

One emphasis of the fishery program will be the coordination with other resource management. Of all the Forest resource activities, timber management activities and road construction, reconstruction, and operation potentially have the greatest effect (direct and cumulative) on fish and fish habitat (on and off the Forest). This fact was recognized and was addressed in the cumulative effects analysis (refer to Appendix H, in the accompanying FEIS). This analysis resulted in a method to meet water quality and riparian management requirements (MR's), expressed as a set maximum number of acres available for timber harvest, by decade, by watershed. See Table 4-18, Forest-wide Standards and Guidelines for Water and Riparian Areas, later in this chapter.

Protection, mitigation, and restoration of habitat will be a primary emphasis in the fishery program. This would include pre-project coordination and planning as well as utilizing KV funds for post-project mitigation measures and monitoring. Also, Forest Roads and Trail (FR&T) funds will be used to correct road-related damage to fish habitat.

Another resource area where the fishery program will coordinate closely with other resource management is developed recreation. Developed recreation sites on the forest are usually located close to aquatic systems; many of these systems contain one or more anadromous or resident fish species. Certain developed recreation sites or activities can impact or affect these fish populations or their habitats. Most of the impact ,or the potential for impact, is alterations or modifications of the in-channel or the adjacent riparian area conditions. Existing and potential campgrounds, boating and swimming sites, alpine ski resorts, organizational camps, and recreational residences are examples of developed recreation sites or activities that can impact the Forest fishery resources.

Another emphasis area is habitat capitol investment for anadromous and resident fish. Opportunities exist in the seven major river basins located within the Forest boundary to improve or restore either spawning or rearing habitat for salmon, sea-run trout or resident trout. Habitat improvement projects to benefit these species are listed and scheduled in Appendix C. Some of these projects improve spawning and rearing habitat, while others provide fish passage to presently unused or inaccessible areas. Most projects will benefit more than one species. Most projects require additional survey work or design before they can be implemented. To be effective (to increase the capability of Forest habitat to produce more fish), this anadromous and resident fish habitat improvement program must be a stable, multi-year program.

Under the USFS nation-wide initiative, Rise to the Future, the Forest has developed a 5 year action plan called "Catch-the-Action". This action plan will be the major document to guide the Forest's fishery program in implementing the fishery management portion of the Forest Plan.

Additional inventories and data information needs will be carried out to update and complete existing (baseline) data. A list of fishery data needs is found at the end of Chapter 2.

Monitoring is a major part of implementing the Plan. Details of the monitoring needs for fish and water are in Chapter 5.

The Forest will coordinate with State, local, and other Federal agencies and with the various Puget Sound Indian tribes regarding management programs, projects, and activities.

Fishery Activities and Outputs

The Forest will provide and manage habitat for anadromous and resident fish species.

Habitat capability for anadromous fish will be managed at a high production and capitol investment level. The resident fish program will also be managed at the highest capitol investment level. This is management intensity 13D.

The present estimated annual anadromous fish production (escapement and harvested fish) resulting from the habitat within the Forest boundaries is 1,093,000 adult fish. The estimated annual production of anadromous juveniles (smolts) is approximately 16,000,000. With a high capital investment in habitat restoration and/or improvement this annual value could be increased to approximately 18,000,000 smolts. It would take 5-10 years of high capital investment to reach this production level. The present annual value of the anadromous fish produced from the Forest (commercial and sport fish value) is approximately $18.9 million dollars.

The present estimated public demand on the resident fishery from within the Forest boundaries is a little over 1.1 million angler days. This use has a present annual value of a little over $4.25 million dollars.

Three fishery outputs (as mentioned in Table 4-1) will be monitored:

1. Pounds of anadromous fish commercially harvested;

2. Smolts produced (anadromous) as a result of habitat improvement;

3. WFUD's from resident sport fishery (this value is added to the wildlife WFUD value).

Vegetation

The diverse vegetative communities, successional vegetative change process and current vegetation conditions on the Forest are described in Chapter III of the FEIS associated with this Plan. In this section, brief summaries are included for the timber, vegetative diversity, forage, old growth, and threatened, endangered, and sensitive plant resources. Included are tabular and graphic displays with narrative explanation of how planned management activities will change the resource from the present to future conditions.

Timber Program

The timber program is described for the following areas:

- o Timber resource land suitability classification;
- o Mountain hemlock study;
- o Timber program output objective;
- o Potential increase in the ASQ;
- o Vegetative management practices;
- o Insects and disease;
- o Long term sustained yield capacity;
- o Timber productivity classification; and
- o Present and future Forest conditions.

Timber Resource Land Suitability Classification. Table 4-8 lists land classification acres resulting from the timber resource land suitability classification process. This process is required by NFMA, 36 CFR 219.14. Appendix B in the FEIS describes, in detail, the process on this Forest. Refer to the glossary for definitions of technical terms.

Table 4-8
Land Classification 1/

Classification		Acres
1. Non-Forest land (includes water) 2/		422,086
2. Forest land		1,301,399
3. Forest land withdrawn from timber production		442,204
4. Forest land not capable of producing crops of industrial wood		0
5. Forest land physically unsuitable:		
- irreversible damage likely to occur		95,476
- not restockable within 5 years		159,739
6. Forest land - inadequate information 3/		6,700
7. Tentatively suitable forest land (item 2 minus items 3, 4, 5 and 6)		597,280
8. Forest land not appropriate for timber production 4/		250,869
- Management Requirements	81,168	
- multiple-use objectives	93,335	
- cost efficiency scheduling	76,366	
9. Unsuitable forest land (items 3, 4, 5, 6, and 8)		954,988
10. Total suitable forest land (item 2 minus item 9)		346,411
11. Total National Forest land (items 1 and 2)		1,723,485

1/ 36 CFR 219.14; or see Timber Resource Land Suitability Classification in Glossary.

2/ Includes water (17,356 acres) and forest lands developed for non-forest use (22,513 acres).

3/ Lands for which current information is inadequate to project growth or yield responses to timber management.

4/ Includes uneconomical, and not scheduled lands.

Federal regulations require that all forested lands designated not suited for timber production in the Plan be reviewed for suitability at least every ten years. Unsuitable lands may be reviewed and designated suitable for timber production due to changed conditions at any time. Such designation would require an amendment to the Plan.

Mountain Hemlock Study. Approximately 76,000 acres of forested land in the Mountain Hemlock association were classified unsuitable because of regeneration difficulty: not restockable within five years. The "Study Plan for the Determination of Suitability for Timber Management of the Mountain Hemlock Zone of the Mt. Baker-Snoqualmie National Forest" (available at the Forest or Regional Office) prescribes a study to determine what portion of these lands could be designated suitable for timber production. The study will collect information on 25 sale units of 6 to 12 acres each, with varying combinations of applied silvicultural regeneration systems and management practices. To facilitate the study, timber sale contracts will require completion of the purchaser's on-the-ground obligations within one year.

Timber Program Output Objective. Adherence to Forest management direction should assure that Plan timber production output objectives and coordination of timber management activities with other resource management objectives are achieved. Timber production areas should provide the highest levels of other desired resource values possible within timber production objectives. Forest wide Standards and Guidelines will be followed. The monitoring and evaluation process described in Chapter 5 requires reports and evaluation of how well the timber management program is meeting management direction and projected activities and outputs. Evaluation reports may include recommendations to change direction, adjust projected outputs, or amend the Plan.

The allowable sale quantity (ASQ) of 22.4 MMCF is the output objective driving the timber program for achievement of planned levels; see Tables 4-1 and the following table, 4-9. The ASQ is a limit on the quantity of timber planned for sale from suitable land for the ten-year time period specified for the Plan. The ASQ is usually expressed on an average annual basis for the Plan period, yearly amounts may be above or below the annual average limit established for the decade, as long as the decadal limit is not exceeded. Timber volume chargeable to the ASQ is specified in Forest-wide Standards and Guidelines. The timber sale volume chargeable to the ASQ must be stated in the final sale preparation package.

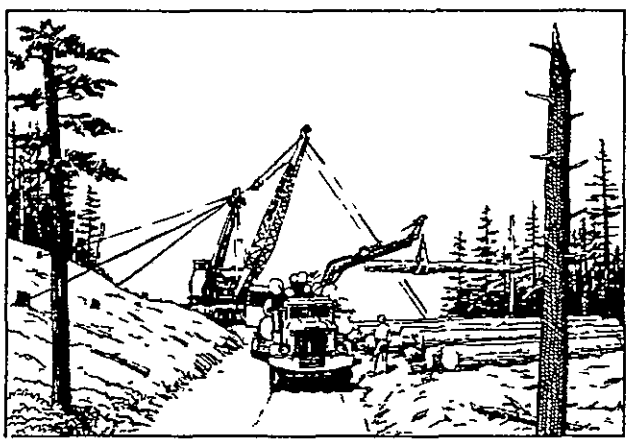


Table 4-9
Allowable Sale Quantity and Timber Sale Program Quantity
(Annual Average for First Decade)

	Allowable Sale Quantity (MMCF)	
	Sawtimber	Other Products
Regeneration harvest:		
Clearcut	22.0	
Shelterwood and seed tree		
-Preparatory cut	0	
-Seed cut	0	
-Removal cut	0	
Selection	0	
Intermediate harvest:		
Commercial thinning	0.4	
Salvage/sanitation	0	
Total	22.4	

	Additional Sales 1/ (MMCF)	
	Sawtimber	Other Products
Total for All Harvest Methods	1.3	1.8

	Timber Program Output Objectives	
	MMCF	MMBF 2/
Allowable Sale Quantity	22.4	108
Timber Sale Program Quantity 3/	25.5	122.1

1/ Includes nonchargeable volumes from suitable and/or unsuitable lands. Other products is an estimate of fuelwood based on a percentage of unutilized material associated with regeneration harvest.

2/ Scribner Decimal C Board Foot Measure.

3/ Total of allowable sale quantity and additional sales.

The ASQ may be estimated 1/ as 96.2 percent of the total net timber volume meeting Forest utilization standards to be sold from suitable land within the boundary of a regeneration harvested clearcut, or within the boundary where all timber is removed in other activities, e.g. clearing for road construction. All live or green volume in commercial thinning sales and salvage sales outside regeneration harvest units are in management areas allowing scheduled timber harvest. This volume is also chargeable to the ASQ.

Control of the ASQ timber quantity is expressed in cubic foot measure, and harvested acres, for the total Plan period and may vary from year to year. Conversion to board feet measure in this Plan is 4.79 board feet per cubic foot unless otherwise specified.

Projected annual outputs and activities necessary to meet the ASQ planned level are included in Table 4-1; included are miles of road construction and reconstruction, acres of timber harvested by clearcut and commercial thinning, acres of reforestation, and acres of timber stand improvement. Table 4-10 lists average annual acres of vegetation management practices scheduled in the first decade. Road and bridge construction and reconstruction schedules appear in Appendices A and B. The latter includes capital improvements in arterial and collector roads and bridges. Appendix A, Timber Program Activity Schedule, lists timber purchaser road construction and reconstruction scheduled for each timber sale.

Approximately 30% of the planned ASQ of 22.4 MMCF/yr (107.5 MMBF/yr) is produced from Management Areas other than MA 17, where the production of wood fiber is not the primary objective of management. The acres receiving vegetative management, and the amount of wood fiber produced, by management and other identifiers, will be tracked in Forest Plan monitoring (see Chapter 5, Monitoring Plan).

The ASQ output requires a substantial investment in precommercial thinning, 996 acres per year, as shown in Table 4-10. If full achievement of this intensive forestry practice is not possible due to lack of funding or other reasons, or if a higher level of achievement occurs, it may be necessary to adjust the ASQ accordingly. Approximately 2,800 acres of precommercial thinning per year has been accomplished in recent years. The first two decades of the Plan average 1,993 acres per year.

1/ This estimate was calculated as follows: (0.301 MCF per acre of net salvable dead volume per acre determined in 1976 Forest inventory) divided by (mean net live or green MCF volume per acre of existing pole and larger timber condition classes in suitable lands plus 0.301 MCF per acre of net salvable dead volume per acre) x 100 = 3.8%; 100% - 3.8% = 96.2% net live or green volume per acre. "Timber to be sold" is significant in this estimating guideline; any net timber volume meeting Forest utilization standards left to benefit wildlife, or for other purposes would be excluded from the 96.2% multiplier.

Table 4-10
Vegetation Management Practices
(Annual Average in First Decade for Suitable Lands)

Practice 1/	Acres
Regeneration Harvest	
Clearcut	2,865
Shelterwood and seed tree: 2/	
-Preparatory cut	0
-Seed cut	0
-Removal cut	0
Selection 2/	0
Intermediate Harvest	
Commercial thinning	200
Salvage/sanitation	84
Timber Stand Improvement	996
Reforestation	
Planting	2,239
Natural Stocking	626

1/ Regeneration and Intermediate Harvest acres by sale and Ranger District are listed in the Ten-Year Timber Sale Schedule, Appendix A of this document.

2/ Miscellaneous amounts of these regeneration harvests may occur.

If annual monitoring determines that the precommercial thinning acres are plus or minus 10 percent from 996 acres per year, the ASQ may be adjusted based on additional analysis. The Plan would be amended to portray the new ASQ.

The average annual ASQ and additional sales (including fuelwood) planned for annual sale in the first decade is the timber sale program quantity (TSPQ), 25.5 MMCF (122.1 MMBF) as shown in Table 4-9. The timber program activity schedule in Appendix A lists, by each Ranger District, the proposed timber sales for the first three years (FY 1990-92) and a proposed pool of projects thereafter. Listed for each scheduled sale are: 1) sale name, 2) description of legal location, 3) total acres for each harvest method, 4) total volume, 5) miles of road construction and reconstruction, 6) the Management Areas in which the sale is located, and 7) other pertinent remarks.

Some sales require five or more years of preparation between a probable sale area and the sale date. The ten-year timber sale schedule is based on current conditions and information available. Conditions and new information at any time may eliminate, delay, or revise a scheduled sale. The timber sale schedule may be modified during the implementation of this Plan. The degree of modification will determine whether the Plan needs amendment, in accordance with the required processes. (Refer to Chapter 5, Amendment and Revision.) Final section locations are undetermined for some of these sales.

Vegetative Management Practices. Table 4-10 lists the average annual acres of vegetation management practices scheduled for Decade 1. Planning projections in FORPLAN were made using clearcutting as the only regeneration harvest cutting method. Clearcutting is the most commonly appropriate harvest cutting method in this Forest. Appendix F of the FEIS describes the criteria and rationale for selection of the harvest cutting method.

Miscellaneous amounts of suitable acres (less than 50 per year) may be harvested using the shelterwood or selection system. When this occurs, it will reduce the number of acres being harvested via clearcuts. Salvage sales are scheduled on 84 acres per year. Regeneration harvest clearcut acres calculated by FORPLAN are 2,865 acres per year.

Scheduled sales average more volume per acre than projected regeneration harvest acres.

This difference in volume per acre is attributable to specific sale areas versus Forest-wide average yield tables; the latter are net green timber volume versus net green and dead timber volume in scheduled sale estimates. Deductions of 3% were made from FORPLAN timber yield tables to aid in maintaining primary cavity excavator populations at 40% of their biological potential. In addition, the clearcut acres scheduled for a sale are those shown on the sale area map, while the volume shown for those clearcut acres includes volume from acres of road construction and reconstruction clearing (and as noted above, miles of scheduled road construction are almost twice the miles projected). The timber sale contract differentiates between acres of harvest in clearcuts and road construction.

Commercial thinning harvest (HTH) is a prescribed practice in Forest-wide and management area standards and guidelines. A total of 200 acres per year of HTH sales have been scheduled in the first decade (Table 4-11). The structure of the Forest's model precluded HTH outputs from FORPLAN until later decades. First decade HTH acres scheduled were planned outside the FORPLAN model. The number of acres of HTH were estimated for Decades 2, 3, 4, and 5. Dead and defective, standing and down tree habitat needs will be provided for in commercial timber harvest areas.

Annual reforestation of 2,865 acres (Table 4-11) will be required to restock regeneration cuts. Planting will average 2,239 acres per year and natural stocking 626 acres per year in the first decade.

Planned acres of precommercial thinning (timber stand improvement) and the relationship of accomplishment to the ASQ has been reviewed above. Other timber stand improvement practices prescribed in standards and guidelines will be conducted as necessary to meet the timber management objectives of the applicable management area.

Fertilization to increase timber yield is one practice that will be used to the extent practical. The yield increase will not be an "earned" harvest, as in the case of precommercial thinning. As more field projects are conducted and research continues, the gain from fertilization may be included in yield tables used in the next Plan revision.

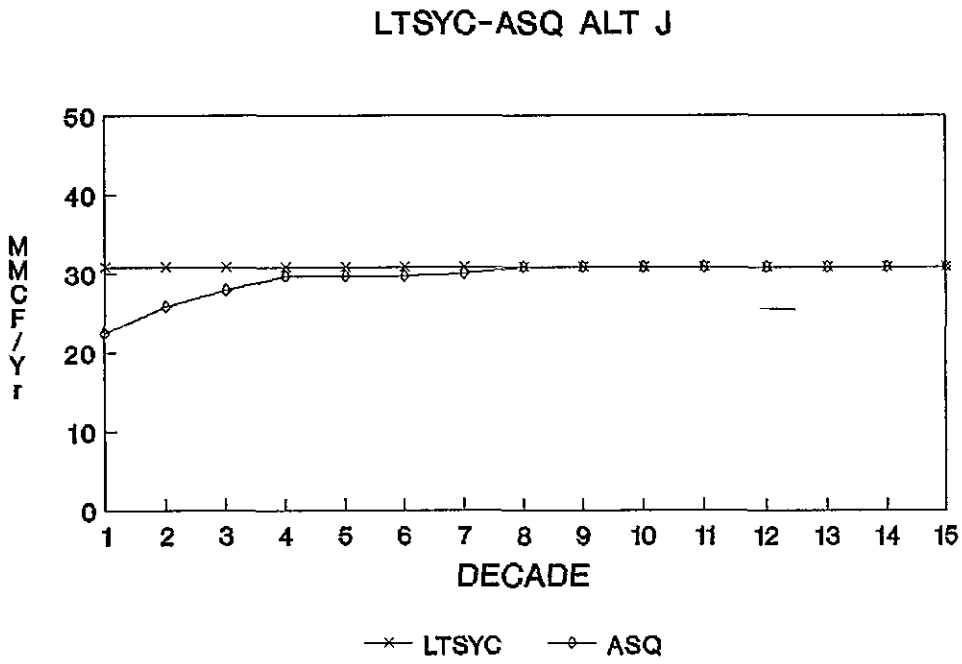
All of the above vegetative management practices may also occur on acres identified as unsuitable for timber production unless otherwise noted in the management area standards and guidelines. Trees may be cut or removed for the following reasons, provided that Forest-wide Standards and Guidelines, and the management direction for the area are achieved:

- Salvage trees or stands killed or substantially damaged by fire, windthrow, or other catastrophe;
- Control the spread of insect or disease outbreaks;
- Conduct research;
- Provide for the safety of Forest users (this includes hazard tree removal in camp and picnic grounds, in administrative sites, and along roads open to the public;
- Maintain or enhance fish and wildlife habitats;
- Improve the visual resource by opening scenic vistas or by improving visual variety;
- Construct new facilities such as roads, trails, administrative facilities, recreation facilities, and so forth.

Insects and Disease. Insects and disease on this Forest have all been associated with the vegetation resource. During the interdisciplinary review process used for developing project plans for timber sales or other vegetation-disturbing activities, insects and diseases are considered. The review process identifies specific actions that must be taken to minimize their effect on the vegetative resource or their effects on other resources or resource issues.

Long Term Sustained Yield Capacity (LTSYC). LTSYC was calculated by the FORPLAN model using beginning inventory volume, 1,805.6 MMCF, existing timber condition classes, and managed timber yield intensities assigned to analysis areas in suitable lands, producing a LTSYC of 30.4 MMCF/Year. Figure 4-2 displays LTSYC and ASQ over the 15-decade planning horizon.

Figure 4-2
ASQ and LTSYC - 15 Decades



LTSYC - 30.4 MMCF

Timber Productivity Classification. Table 4-11 shows suitable and unsuitable forested lands by potential growth productivity classes. Sixty-six percent of suitable lands fall into the 85-119 and 119-164 CF/ac/yr potential growth classes. The Max Timber Benchmark LTSYC (119 CF/ac/yr) and Biological Potential Benchmark LTSYC (120 CF/ac/yr) reflect the approximate mean productivity of these two classes. The Plan produces an estimated ASQ in the fifth decade of 85.9 CF/ac/yr, and LTSYC of 87.8 CF/ac/yr (beginning in the sixth decade) from suitable lands. This difference in yield reflects timber production foregone to provide multiple-use opportunities and outputs for other resources and resource uses.

Present and Future Forest Conditions. Table 4-12 shows a tabular history of volume, growth, mortality, rotation age, and age class acres of forested land at the present time and projected into the 15th. decade.

The footnotes clarify acres used and sources of volume estimates. Growing stock volume is live timber 9 inches DBH and greater at present, and live timber 7 inches DBH and greater in the future. Live cull is volume from live trees that were less than 25% sound when inventoried. Rotation ages include two years of lag time to reforest regeneration harvest areas, except four years lag time is included in the natural final harvest intensity (MA 17A) rotations.

Table 4-11
Timber Productivity Classification 1/

Potential Growth (CF/Ac/Yr)	Suitable Lands	Unsuitable Lands
	.....Thousand Acres.....	
Less than 20	0	238
20-49	15	32
50-84	65	133
85-119	118	248
120-164	109	226
165-224	38	76
225+	1	2
Total	346	955

1/ Includes all forest land (See Item 2, Table 4-8).

Timber productivity classification calculated from the 1976 Forest Inventory measurements was unsatisfactory. The above productivity classification was calculated using Forest Inventory plot data and following the process used to calculate the site index of productivity used in developing managed timber yield tables (1984). This process is documented in Forest Planning Records.

By Decade 15, the suitable lands are well distributed in age classes 10 to 200+. There are acres in the present 30-, 40-, 50-, and 60-year age classes but they are not shown because of the age class grouping in mapping and modeling. These acres are grouped into the 20- and 70-year age classes, mostly in the former. Future Forest inventories should better define the younger age classes. The most striking change is the reduction in the 200+ age class. The future growing stock volume is sufficient to continue the LTSYC on beyond the 15-decade horizon indefinitely.

Table 4-12
Present and Future Forest Conditions

Forest Component	Unit of Measure	Forested Land	
		Suitable	Unsuitable 1/
Present Forest			
Growing Stock 2/	MMCF	1,859.0	4664.56
	MMBF	8,908.4	22,343.0
Live Cull 3/	MMCF	54.3	104.3
	MMBF	260.1	672.0
Salvable Dead 4/	MMCF	79.7	206.0
	MMBF	381.7	986.0
Annual Net Growth 5/	MMCF	16.2	42.2
	MMBF	77.6	202.0
Annual Mortality 6/	MMCF	10.9	28.2
	MMBF	52.4	135.3
Future Forest			
Growing Stock	MMCF	1,612.1 7/	
Annual Net Growth	MMCF	34.8 7/	
Rotation Age	Years	60 8/ to 120	

Age Class Distribution Acres On Suitable Lands 9/	Suitable Forested Land	
Age Class	Present	Future
	.....acres.....	
10	46,049	32,310
20	49,810	32,310
30	0	32,310
40	0	32,310
50	0	32,310
60	0	32,310
70	17,560	34,091
80	20,594	27,512
90	0	27,839
100	47,322	24,265
110	0	11,296
120	0	10,412
130	0	4,264
140	9,932	7,320
150	14,326	688
200+	140,817	4,865

Footnotes for Table 4-12 are listed on the following page.

1/ Volume estimates were made for 684,273 acres having a productivity of 20 CF or more per acre per year, and acres of poles and larger size timber; this includes pole and larger material from table 4-8, items 3,5,and 8.

2/ Suitable volume: Calculated at the midpoint of Decade 1 before harvest using empirical yield tables for existing forest condition classes selected as suitable acres. In FORPLAN report F10.6, this growing stock volume in suitable acres is 1,805.6 MMCF which is 3% less than shown above; the yield tables in FORPLAN are reduced 3% to maintain the population of primary cavity excavators at 40% of potential.

3/ Suitable and unsuitable volume: Used National Forest Inventory Statistics for the Mt. Baker-Snoqualmie National Forest, 1976 Forest Inventory, Table 4, May 20, 1978, unpublished. Sound cull plus rotten cull per acre for acres of pole and larger timber.

4/ Suitable and unsuitable volume: Used 1,441 board feet/acre determined from reference cited in 3/ above, Table 3 (corrected), and multiplied times acres of pole and larger timber. A conversion of 4.79 board feet per CF was used.

5/ Suitable and unsuitable volume: Used the first decade growth from FORPLAN Report F10A for suitable volume. Unsuitable volume used average growth rate of 61.64 CF/ac/yr (poles and larger material) from FORPLAN report F10A, multiplied by forested acres, pole and larger material.

6/ Suitable and unsuitable volume: Used 41.284 CF/acre/year determined from reference cited in 3/ above, Table 5 (corrected), and multiplied times acres of pole and larger timber.

7/ Growing stock volume is at the midpoint of Decade 15 before harvest and growth is from Decade 14 to 15 of the planning horizon as reported in FORPLAN.

8/ A range of rotation ages for regenerated stands on lands with timber emphasis, Management Area 17.

9/ From FORPLAN run; present and future are at the start of the first decade and the mid-point of the 15th decade, before harvest.

Forage

Forage for grazing animals is available, to some degree, in all vegetation types. Forage for wildlife is included in the wildlife resource summary. The range-permitted grazing projection in Table 4-1 is 1,000 animal unit months per year. This projection reflects portions of two sheep grazing allotments on the Forest; neither permit has been used in the past five years. Transitory range is available - the grass-forb plant succession stage lasts two to five years - in clearcut harvest units. The demand for transitory range has been low to nonexistent since an unsuccessful temporary permit to graze sheep in 1978.

Old Growth

Old growth existing on the Forest has been functionally defined for analysis purposes in this plan as existing mature large sawtimber (S1 in the R2MAP Forest Planning Data Base) before harvest in Decade 1. Existing old growth averages 240 years of age on the northern end of the Forest, and 260 years on the southern end of the Forest. Old growth as defined here may or may not meet the definition in the Region 6 Regional Guide. An old growth inventory is necessary to determine this relationship. This inventory is scheduled to begin in 1990.

Old growth on the Forest presently totals 643,538 acres. There are 232,500 acres of old growth in wilderness; 134,400 acres in other Forest lands unsuitable for timber production; 135,821 acres in Forest lands not appropriate for timber production; and 140,817 acres in lands suitable for timber production.

There are 140,817 acres of old growth in suitable acres in the Plan. In the first decade, 18,879 acres of this suitable old growth will be harvested. By the end of Decade 5 (50 years), only 32,373 acres will remain in suitable lands; however, a total of 535,094 acres will remain Forest-wide.

The management of old growth on the Forest will focus on the protection and maintenance of older forest stands allocated for MR wildlife habitat areas, and in other compatible management areas. Research and development of management guidelines for old growth will be an emphasis in the research branch of the Forest Service, and in cooperative Forest Service - Washington State Department of Wildlife studies. Experimental silvicultural treatments may be developed from this research. A major question posed will be whether it is possible to manage for old-growth forest, of for the habitat components required by certain mature and old-growth forest dependant species.

An up-to-date inventory of older forest stands, with data on horizontal and vertical structure, plant composition, longterm productivity, and special habitat components will be completed. Information on fungal, invertebrate, and herptile components, neglected areas of old-growth forest emphasis, will be collected.

Needs and methods for connecting "islands" of old-growth habitat with each other via travel corridors containing protective cover and feeding habitat will be identified and better defined.

Diversity Management and Long-term Productivity

Diversity will be approached from the perspective of long-term forest productivity, rather than as an issue related to individual resource areas. Silviculturalists, fuels managers, ecologists, botanists, wildlife biologists and others will work in concert to achieve mutual objectives for diversity and long-term productivity. Prescriptions will be integrated resource plans for maintaining diversity and achieving the management objectives assigned to an area.

Diversity management will begin with maintaining soil productivity over time, include management of dead and down large and small woody materials, standing dead and defective trees, maintaining viable populations and distributions of native and desired non-native plant and animal species, and maintaining all natural communities on the Forest. Special emphasis will be placed on management of threatened, endangered and sensitive species and fragile and scarce communities. Minimum levels of these types of diversity will be maintained in all parts of the Forest. Diversity will be maintained at the highest possible levels compatible with other resource objectives in all areas.

The effects of fragmentation of natural communities, and means of maintaining fully viable areas of these communities, particularly old growth, and connecting habitat areas will be explored and management guidelines validated and improved.

Threatened, Endangered, and Sensitive Plants

No federally-listed threatened or endangered plant species have been found on the Forest. Two plant species, suspected but not known to occur on the Forest, are Category 2 candidates for Federal listing. They are Calamagrostis crassiglumis and Castilleja cryptantha.

Twenty-six species from the Region 6 Forest Service list of Sensitive Plants are known to occur on the Forest, and another fourteen are suspected to occur (See Table 4-13). Sensitive species are not protected under the Endangered Species Act. However, Forest Service policy requires that these plants be managed to maintain viable populations and avoid a need for placing them on the Federal list.

The list of plant species will continue to change, as inventories produce more information on the occurrence, numbers, and distributions of species. Species may be removed from the list if additional information shows that they are not as rare as once thought, or as management plans are developed to ensure their viability. Species may also be added to the list as they are discovered to occur on the Forest, or if they are more rare than presently thought.

Table 4-13

Region 6 Forest Service
Sensitive Plant Species On The
Mt. Baker-Snoqualmie National Forest
(June 1989)

Species Known to Occur on the Forest:

Scientific Name	State Category
ASTER SIBIRICUS VAR MERITUS	Sensitive
BOTRYCHIUM LANCEOLATUM	Sensitive
BOTRYCHIUM LUNARIA	Sensitive
BOTRYCHIUM MINGANENSE	Sensitive
BOTRYCHIUM MONTANUM	Sensitive
BOTRYCHIUM PINNATUM	Sensitive
CAMPANULA LASIOCARPA	Sensitive
CAREX BUXBAUMII	Sensitive
CAREX PAUCIFLORA	Sensitive
CAREX SCIRPOIDEA VAR SCIRPOIDEA	Sensitive
CAREX STYLOSA	Sensitive
CHAENACTIS THOMPSONII	Sensitive
COPTIS ASPLENIFOLIA	Sensitive
DODECATHEON PULCHELLUM VAR WATSONII	Sensitive
DRYAS DRUMMONDII	Sensitive
FRITILLARIA CAMSCHATCENSIS	Sensitive
GENTIANA DOUGLASIANA	Sensitive
GENTIANA GLAUCA	Sensitive
LYCOPODIUM DENDROIDEUM	Sensitive
PEDICULARIS RAINIERENSIS	Sensitive
PLATANTHERA CHORISIANA	Threatened
PLATANTHERA OBTUSATA	Sensitive
PLEURICOSPORA FIMBRIOLATA	Sensitive
RANUNCULUS COOLEYAE	Sensitive
SAXIFRAGA DEBILIS	Sensitive
SAXIFRAGA INTEGRIFOLIA VAR APETALA	Sensitive

Species Suspected to Occur on the Forest:

Scientific Name	State Status
AGOSERIS ELATA (Nutt) Greene	Sensitive
CALAMAGRSTIS CRASSIGLUMUS Thrub	Threatened
CAREX COMOSA Boott	Sensitive
CAREX MACROCHAETA C.A. Meyer	Sensitive
CAREX SAXATILIS L. Var. Major Olney	Sensitive
CASSIOPE LYCOPODIOIDES (Pall) D. Don SSP. CRISTAPILOSA Calder and Taylor	Sensitive
CASTILLEJA CRYPTANTHA Pennell & G. N. Jones	Threatened
CIMICIFUGA ELATA Nutt in T&G	Sensitive
DRABA AUREA Vahl in Hornem	Sensitive
LOBELLA DORTMANNA L.	Sensitive
LOISELEURIA PROCUMBENS (L.) Desv.	Sensitive
LUZULA ARCUATA (Wahlenb.) WahlenB	Sensitive
MICROSERIS BOREALIS (Bong.) Schultz-Bip.	Sensitive
SAXIFRAGA CERNUA L.	Sensitive

The emphasis of this program will be on the inventory of proposed project areas, reserved areas, and areas where vegetative management is precluded or minimal for threatened, endangered and sensitive (T&E&S) plants. A data base of sensitive plant locations will be developed, and information on habitat requirements, range, and distribution of these plants will be developed.

This information will be used to develop species management guides for all of these species over the decade, with priority given to those plants which are federally-listed, candidates for federal listing, or likely to occur in areas where management activities which remove or affect vegetation are proposed. Threats to species' survival will be identified in these plans. Protected populations or subpopulations will be identified, across a species' range on the Forest, and, where appropriate, experimental populations will be identified. These experimental populations will be used to increase our understanding of the effects of management activities on a species. Permitted and restricted activities at sites of protected populations will be identified in the management guides, as will plans for monitoring protected and experimental populations.

All areas where projects or activities are proposed which may affect T&E&S plants will be inventoried prior to management decisions. Botanical areas, RNA's, wilderness areas, MR mature and old-growth areas and other "protected" habitats will also be inventoried, to identify T&E&S plant populations.

Inventories, management guides and monitoring plans will all be coordinated with the Washington Department of Natural Resources Natural Heritage Plant Program, the Forest Service Regional Office, and adjacent Forests. Where federally-listed plants are involved, activities will be coordinated with the U.S.D.I. Fish and Wildlife Service.

Research Natural Areas

Research natural areas (RNA's) are tracts of land set aside as examples of typical or unique natural ecosystems or habitats. They are preserved in as near a natural state as possible. Their main purposes are to provide: baseline areas against which effects of human activities in similar areas can be measured; sites for study of natural processes in undisturbed ecosystems; and gene pool reserves for plant and animal species, especially those that are classified as threatened, endangered, and sensitive.

This section describes the established and recommended RNA's on the Forest.

Established RNA's

The Mt. Baker-Snoqualmie National Forest has three established RNA's. Lake Twenty-two RNA, on the Darrington Ranger District, is 790 acres in size and represents a western redcedar/western hemlock forest with subalpine lake. It was established in 1947. Heavy recreation use is well established and will be allowed to continue as long as it does not degrade the RNA quality for which it was established. However, while recreation use will be allowed, it will not be encouraged. Only minor reconstruction or rerouting of existing trails will be permitted, provided it does not compromise the purposes of the RNA.

The Long Creek RNA is located two miles northeast of Lake Twenty-Two RNA, within the Boulder River Wilderness on the Darrington Ranger District. It is 640 acres in size and was established in 1947 to represent western hemlock forests and climax red alder forest.

The North Fork of the Nooksack River RNA on the Mt. Baker Ranger District is 1,407 acres in size and represents Douglas-fir and western hemlock forests. It was established in 1937.

All three existing RNA's have been proposed as potential National Nature Landmarks.

No new trail or facility construction will be allowed in any of these areas. Recreation use will be allowed, but not encouraged.

Recommended RNA's

Five candidate areas, identified by the Regional Research Natural Area Committee, are recommended for designation as RNA's in this Plan. Designation occurs after an establishment report is prepared and approved by the Chief of the Forest Service.

Table 4-14 is a summary description of the recommended RNA's. Four of these are located partially or totally within wilderness. In these cases, the most restrictive management prescription (wilderness intensity or RNA) shall be applied in those portions of the RNA that fall within wilderness.

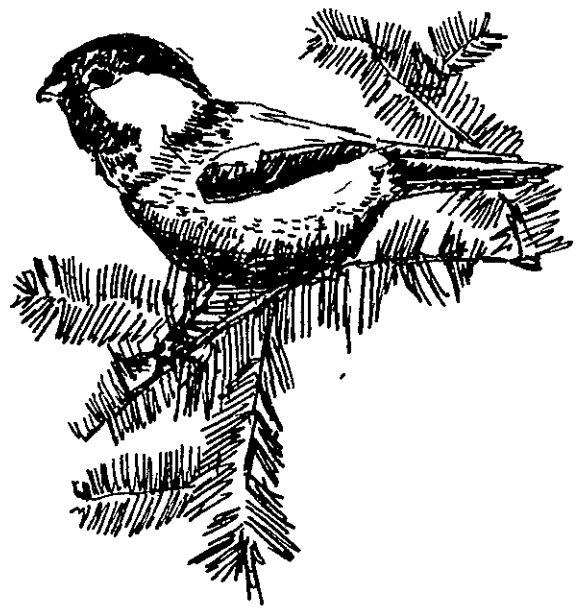


Table 4-14
Recommended Research Natural Areas

Area Name	Acres	Location	Ecosystem
North Fork Nooksack Addition	2,460	Mt. Baker Wilderness, Mt. Baker Ranger District	Douglas-fir with 75-year-old burn, wide array of sub-alpine communities.
Lily Lake	800	Clearwater Wilderness, White River Ranger District	High elevation mountain hemlock/ Pacific silver fir forest, typical mid- to high-elevation subalpine lake.
Perry Creek	2,066	Darrington Ranger District	Unique assemblage of rare fern species, also has Alaska cedar (in stand with mountain hemlock and sub-alpine fir, and heather/huckleberry community).
Green Mountain	2,060	80% within Glacier Peak Wilderness, Darrington Ranger District	Subalpine parkland mosaic, heather/ huckleberry community, and sub-alpine lush herbaceous communities.
Chowder Ridge	1,920	Mt. Baker Wilderness, Mt. Baker Ranger District	Alpine community mosaic with Krummholz tree groups.

Minerals

This section contains: (1) a brief description of the minerals management program; and (2) a summary of how the mineral resources and activities will be managed under the Plan.

Minerals Management Program

Management of mineral resource activities will continue to be largely responsive in nature. The Forest will use the Plan's standards and guidelines to direct mineral activities to insure they are conducted to the extent possible in a manner that is as compatible with other resource objectives. Even though the Forest Service's objective is to ensure that no unnecessary or undue degradation of the environment occurs, extreme care will be used to ensure that environmental protective stipulations and reclamation objectives are reasonable, enforceable, cost effective, and successful.

At times, mineral activities will be incompatible with management objectives identified in this Plan. In these situations, reasonable reclamation objectives will be established and ensured by adequate bonding, but the activity will be encouraged.

Within withdrawn areas, valid existing rights must be confirmed before approving any mineral development activities. However, once confirmed, the Forest will facilitate and encourage any mineral development activities authorized by those rights. In many withdrawn areas, prospecting activities can be conducted in a manner compatible with the purposes of the withdrawal. Such activities provide no rights to develop the mineral resources; when proposed, they will be encouraged. The results of any such prospecting will be used when reviewing withdrawals as required by the Federal Land Policy and Management Act of 1976 (FLPMA). If mineral resources are discovered and mineral development is determined to be the highest and best use for an area that is presently withdrawn, the withdrawal may be revoked.

As with other resources, monitoring actions will be an important part of the minerals management program. Through monitoring, the processing of mineral management activities can be made more efficient; reclamation techniques can be made more successful; and objectives can be made more achievable. The actual effects that mineral activities have on sensitive resources will also be monitored and evaluated.

As industry's ability to conduct activities in sensitive areas increases, management objectives which tend to restrict mineral-related activities may be modified. In addition, the mineral supply and demand situation will be monitored and newly acquired mineral resource information will be evaluated. If this information justifies changes, the Forest Plan will be appropriately modified or amended.

Mineral Resource Activities

The Plan provides for mineral resource activities to occur, with minimal to moderate restrictions, on 506,923 acres or 29% of the total Forest acres. Under this Plan, the amount of area designated as wilderness will not be changed; however, 85,613 acres (less than 5% of the total Forest area) will be recommended for withdrawl from mineral entry for reasons other than wilderness. An additional 409,230 acres (24% of the total Forest area) will be managed under highly sensitive management prescriptions.

Table 4-15 shows more specifically how these prescriptions affect areas identified as having potential for the occurrence of locatable, nonenergy mineral resources, and areas identified as being "prospectively valuable" for energy mineral resources.

Table 4-15
Effects of Withdrawal and Highly Restrictive Management
On Mineral Resource Potential Areas

Identified Mineral Resource Potential Area	Portion of That Area Withdrawn from Mineral Entry by Prescription 1/	Portion of That Area Managed by Highly Restrictive Management Prescriptions
Area identified as having a "high" and "moderate" locatable mineral potential	Less than 1% (1,774 acres)	35% (51,613 acres)
Area identified as being "prospectively valuable" for oil and gas resources	Less than 0.5% (84 acres)	36% (6,547 acres)
Area identified as being "prospectively valuable" for geothermal resources	Less than 6% (68,613 acres)	25% (301,358 acres)
Area identified as being "prospectively valuable" for coal resources	Less than 5% (5,491 acres)	34% (36,999 acres)

1/ Does not include wilderness.

It is assumed that there will be at least a continuing interest and possibly an increasing interest in the mineral resources on the Mt. Baker-Snoqualmie National Forest. Because of all the variables having influence on mineral activity, the actual amount of activity may significantly vary from that which has been predicted.

Landownership and Uses

Land Classification and Adjustment

The goal of landownership adjustment is to achieve an ownership pattern that best accommodates the land and resource objectives of the Plan. To meet these goals, the Forest will engage in approximately 221,000 acres of land exchange in the first decade. Of this, 67,000 acres is scheduled to occur in the next three years in six exchanges: (1) DNR #3; (2) City of Tacoma; (3) Snohomish PUD; (4) Champion International; (5) Weyerhaesuer; and (6) Murray Pacific.

Landownership guidance is provided in each management prescription. Overall priorities for landownership adjustments are: (1) those that make possible improved resource management; and (2) those that increase management efficiency and reduce management costs.

Additional guidance is in the "Alpine Lakes Management Plan" and "Skagit River Management Plan."

The "Landownership Classification and Adjustment Plan," based on the guidance in the prescriptions, may be found in Appendix G.

Special Land Uses

The major special land uses on the Forest are utility corridors and small hydroelectric proposals.

Existing utility corridors would be continued. Capacity would be increased to the degree feasible to accommodate increased energy needs (e.g., 115 kv line might be increased to 230 kv). One potential new corridor is identified. This corridor would be located in the area of Tacoma Pass to Pyramid Peak running northwesterly toward the Puget Sound area.

The number of small hydroelectric proposals for the Plan are estimated at about 109. Of these proposals, 16 appear to be precluded from development by the management prescriptions. Another 64 proposals have the potential to be compatible with management prescriptions, and 29 proposals will be further evaluated for development potential and the ability to meet management prescriptions and standards and guidelines. Five to ten of these proposals could be expected to reach the Federal Energy Regulatory Commission (FERC) license stage.

Roads

The goal of road management in the Plan is to provide and manage the road system to serve the long-term resource needs and objectives of the management areas. The prescriptions involved in the Plan are intended to maintain a viable transportation system in accordance with road management objectives, which will include identification of anticipated traffic needs, road closures needed for resource management, and identification and correction of road and bridge deficiencies. As funding levels vary, primary priority will be given to resource management and protection, with secondary priority given to user convenience.

The proposed management for all existing Forest Development Roads is documented in the "Forest Road Management Plan," located in the Forest Supervisor's Office. This includes the road management objective for each arterial and collector road, and for individual, or categories of local roads. The road management objective defines the anticipated use of the road, the existing and future road standards, the traffic service and road maintenance level, and any planned closures. This document, along with the bridge inventory and base map of all existing roads comprise the Forest Development Transportation Plan required by NFMA.

The road design, construction, and reconstruction process found in Forest Service Handbook (FSH) 7709 ensures that all new roads are designed and operated to standards that are responsive to the prescribed resource objectives.

Ultimately, the road system will total 3,411 miles, a 18% increase over the present mileage. A total of 134 miles or 26 percent of this new mileage will be completed within the first decade. Of the 511 miles of new road expected to result from the implementation of the Plan, 496 miles will be locals, and 15 miles will be arterials/collectors. The average annual construction rate will be 12.6 miles for locals, and 0.8 miles for arterials/collectors through the first decade.

About 25 miles of existing roads, located in areas assigned to unroaded dispersed recreation, will be permanently closed. Roads permanently closed by the Plan include Elliot Creek, Deer Creek Pass, the end of North Fork Skykomish River, Crystal Creek, and others.

Approximately 34% of the road system will be open to passenger vehicles (maintenance levels 3-5), and 49% will be available for high clearance vehicles (maintenance level 2). The remaining 17% will be temporarily closed (maintenance level 1) during the first decade.

Some roads in deer, elk, and goat wintering habitat and T & E species habitat will be closed during the use season to reduce harassment. Needs for roads to be open will be examined closely to minimize open road density and wildlife harassment whenever possible.

Road construction and reconstruction miles scheduled (Appendices A and B) differ significantly from miles projected in Table 4-1. Timber purchaser road construction projected, 12.6 miles per year, is approximately 44 percent of the scheduled 28.8 miles per year. Possible explanations are: the Ranger Districts are scheduling more sales in roadless areas than FORPLAN projected in the first decade; the model coefficients used to project road construction miles are in error; or the Ranger Districts are overestimating the miles of road construction that will actually be necessary to service the sales.

Road reconstruction projected at 57.7 miles per year, is approximately 144 percent of the scheduled 40.1 miles per year in the first decade. This difference is understandable because reconstruction is dependent on road condition from road use and damage from unpredictable weather events, resulting in flooding and "washout" of roadbeds and drainage structures. Also, road reconstruction projects vary from minor improvements to major road relocation.

Road maintenance will be accomplished on all National Forest system roads each year to the prescribed service level (see Traffic Service Levels on Table 4-16).

It is estimated that 3,034 miles of National Forest roads will be maintained each year during the first decade.

During the first Decade, approximately 70 miles of road will be built into unroaded areas released by the Washington State Wilderness Act of 1984. Refer to Appendix A, "Ten-Year Timber Sale Action Plan," for further information.

While the majority of the arterial/collector road system is established, roads and bridges do periodically wear out and require reconstruction. See Appendix B for the proposed road construction/reconstruction schedules.

The Plan will not preclude the construction of the Naches Pass Road. This project would be subject to a site-specific environmental analysis, should it be proposed.

A summary of the service levels for the arterial/collector system on each Ranger District is shown below, Table 4-16. The service levels are defined on the first page of the table.

Traffic Service Levels

	Service Level A	Service Level B	Service Level C	Service Level D
Flow	Free flowing with adequate passing facilities.	Congested during heavy traffic such as during logging or recreation activities.	Interrupted by limited passing facilities, or slowed by the road condition.	Flow is slow or may be blocked by an activity. Two-way traffic is difficult, may require backing to pass.
Volumes	Uncontrolled. Will accommodate the experted traffic volumes.	Occasionally controlled during heavy use periods.	Erractic. Frequently controlled as capacity is reached.	Intermittent and usually controlled. Volume limited to that associated with the single purpose.
Vehicle Types	Mixed. Includes the critical vehicle and all vehicles normally found on public roads.	Mixed. Includes the critical vehicle and all vehicles normally found on public roads.	Controlled mix. Accommodates all vehicle types including the critical vehicle. Some use may be controlled to minimize conflicts between vehicle types.	Single use. Not designed for mixed traffic. Some vehicles may not be able to negotiate. Concurrent use by commercial and other traffic is restricted.
Critical Vehicle	Clearances are adequate to allow free travel. Overload permits are required.	Traffic controls needed where clearances are marginal. Overload permits are required.	Special provisions may be needed. Some vehicles will have difficulty negotiating some segments.	Some vehicles may not be able to negotiate. Loads may have to be off-loaded and walked in.
Safety	Safety features are a part of the design.	High priority in design. Some protection is accomplished by traffic management.	Most protection is provided by traffic management.	Need for protection is minimized by low speeds and strict traffic controls.
Traffic Management	Normally limited to regulatory, warning, and guide signs and permits.	Employed to reduce traffic volume and conflicts.	Traffic controls frequently needed during periods of high use by the dominant resource activity.	Used to discourage or prohibit traffic other than that associated with the single purpose.
User Costs	Minimize. Transportation efficiency is important.	Generally higher than A because of slower speed and increased delays.	Not important. Efficiency of travel may be traded for lower construction costs.	Not considered.
Alignment	Design speed is the predominant factor within feasible topographic limitations.	Influenced more strongly by topography than by speed and efficiency.	Generally dictated by topography and environmental factors. Design speeds are generally low.	Dictated by topography, environmental factors, and the design and critical vehicle limitations. Speed is not important.
Road Surface	Stable and smooth with little or no dust, considering the normal season of use.	Stable for the predominant traffic for the normal use season. Periodic dust control for heavy use or environmental reasons. Smoothness is commensurate with the design speed.	May not be stable under all traffic or weather conditions during the normal use season. Surface rutting, roughness, and dust may be present, but controlled for environmental or investment protection.	Rough and irregular. Travel with low clearance vehicles is difficult. Stable during dry conditions. Rutting and dusting controlled only for soil and water protection.

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
Mt. Baker Ranger District				
1030	Sauk Mountain	C	C	C
1040	Olson Creek	C	C	C
1050	Diobsud Creek	C	C	C
1060	Bacon Creek	C	C	C
11	Baker Lake Hwy	A	A/B	A/B
1106	East Bank	C	A	A
1107	Anderson Creek	C	C	C
1118	Dry Creek	C	B	B
1124	Sandy Creek	C	C	C
1127	Sandy Ridge	C	C	C
1130	Marten Lake	C	C	C
1131	Boulder Ridge	C	C	C
1144	Morovitz Creek	C	C	C
1152	Shuksan Creek	C	C	C
12	Loomis Nooksack	A	B	B
1230	Blue Lake	C	C	C
13	Schrieber's Meadow	A	C	C
14	Jackman Thunder	A	C	C
1420	Thunder Lakes	C	C	C
1540	Sibley Creek	C	C	C
1550	Irene Creek	C	C	C
1570	Found Creek	C	C	C

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
Mt. Baker Ranger District, cont.				
16	Illabot Creek	A	B/C	B/C
1610	West Boundary	C	C	C
1620	Illabot Peak	C	C	C
17	Finney-Cumberland	A	B/C	B/C
1705	Gee Creek	C	C	C
1720	Gee Pt-Pressentin	C	C	C
1730	Clendenen Creek	C	C	C
1731	Alder Pass	C	D	D
1735	Finney Peak	C	C	C
1750	DeForest Creek	C	C	C
1755	Little Deer Peak	C	C	C
1775	Claims	C	C	C
18	Segelson	A	B	B
1810	East Big Deer	C	C	C
1820	Westside Higgins	C	C	C
3071	Anderson Creek	C	C	C
31	Canyon Creek	A/C	B/C	B/C
3120	West Church	C	C	C
3130	Kidney Creek	C	C	C
3140	Canyon Ridge	C	C	C
32	Hannegan	A	B	B
33	Wells Creek	A	B	B

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
Mt. Baker Ranger District, Cont.				
36	Grouse Butte	C	C	C
37	Dead Horse	A	C	C
38	Middle Fk Nooksack	A	C	C
39	Glacier Creek	A	A/C	A/C
3910	Thompson Creek	C	C/D	C/D
Darrington Ranger District				
18	Segelson	A	B	B
20	Mtn. Loop, MP 0.0-6.4	A	A	A
20	Mtn. Loop, MP 6.4-20.4	A	B	A
2010	French Cr, MP 0.0-1.0	C	B	B
2010	French Cr, MP 1.0-2.1	C	C	C
2010	French Cr, MP 2.1-8.3	C	D	D
2060	Clear Creek	C	C	C
2070	Murphy Creek	C	C	C
2080	Falls Creek	C	C	C
2081	Goodman Creek	C	C	C
2083	Peekaboo	C	D	D
2140	Prairie Mountain	C	B	C
22	N.Side Sauk River	A	C	C
2210	Gold Hill (4 Mile)	C	D	D
23	White Chuck	A	B	B
2311	Pugh Ridge	C	C	C

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
Darrington Ranger District, cont.				
24	Dans Creek	A	C	C
2420	Dans Creek Divide	C	C	C
25	So. Side Suiattle	A	B	B
2510	Conrad Creek	C	C	C
26	Suiattle, MP 0.0-9.8	A	A	A
26	Suiattle, MP 9.8-24.2	A	B	B
2640	Grade Creek	C	C	C
2642	West Grade Creek	C	C	C
2660	Tenas Creek	C	C	C
27	Straight Creek	C	C	C
28	N.F. Stillaguamish	A	B/C	B/C
2810	North Mountain	C	C	C
2811	Texas Pond	C	C	C
29	Rinker Ridge	A	B/C	B/C
4020	Schweitzer Creek	C	B	B
4030	Mallardy Creek	C	B/C	B/C
4037	River	C	C	C
4052	Deer Creek	C	B	B
4060	Coal Lake	C	B	B
41	Tupso Pass	A	B	B
4110	Green Mountain	C	C	C
42	Pilchuck	C	B	B

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
Darrington Ranger District, Cont.				
49	Curry Gap	A	C	C
North Bend Ranger District				
50	Cedar River/ Snow Creek	A	B/C	B/C
5040	Five Hundred	C	C	C
5040-110	Five Hundred 30	C	C/D	C/D
5060	Snow Creek	C	C	C
5062	Rooster Comb	C	C	C
5066	Six-O-Two	C	C	C
5078	Upper Snow Creek	C	C	C
51	Two Hundred	A	B	B
5134	Three Hundred	C	C	C
5140	Two 10/Two 11	C	D	D
52	Twin Camp	A	C	C
5210	Intake Creek	C	C	C
5220	Twin Camp Creek	C	C	C
54	Green River	A	B/C	B/C
5403	Tunnel	C	C	C
55	Tinkham	A	B/C	B
5510	Hansen	C	C	C
56	Middle Fork	A	C	B
5620	Goldmeyer	C	C/D	C/D
5640	Quartz Creek	C	D	C/D

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
North Bend Ranger District, Cont.				
5630	Taylor River	C	C	C
57	Lennox Creek	C	C	C
58	Denny Creek	C	B	B
5730	North Fork	C	C	C
9020	Garcia	C	C/D	C/D
7034	Sawmill Rdg	C	C	C/D
Skykomish Ranger District				
6022	Heybrook LO	C	D	D
6024	Barclay Creek	C	B	B
61	Sultan Basin	A	B	B
6120	Williamson Creek	C	B/C	B/C
62	No Name Creek	A	C	C
63	N. Fk. Skykomish	A/C	B	B
6320	Trout Creek	D	D	D
6330	Salmon Creek	C	C	C/D
6412	E. Fk. Miller River	C	B	B/D
65	Beckler River	A	A/B	A
6510	Bolt Creek	C	C/D	C/D
6514	Eagle Creek	C	C	C/D
6520	Johnson Creek	C	B	C/D
6522	County Line	C	D	D
6530	Rapid River	C	C	C/D

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
Skykomish Ranger District, Cont.				
6546	Fourth of July Creek	C	C	C/D
6548	Boulder Creek	C	C/D	C/D
6550	East Beckler River	C	D	D
6554	Evergreen Creek	C	B	C/D
6570	San Juan Hill	C	C/D	C/D
6580	West Cady	C	C	C/D
66	Beckler Peak	c	C	C/D
6710	Martin Creek	C	C	D
68	Foss River	A/C	A/B	A/B
6830	Tonga Ridge	C	B	B
6840	Maloney Ridge	C	B	B
White River Ranger District				
70	Greenwater	A	A/B	A/B
7010	Midnight Creek	C	C	C
7012	Divide Ridge	C	C	C
7030	Whistler Creek	C	C	C
7032	Williams Hole	C	C	C
7036	Green Divide	C	C	C
7060	Lower Pyramid	C	C	C
7120	Lido	C	C	C
7125	Slippery Creek	C	C	C
7130	Christoff	C	C	C

Table 4-16
Arterial/Collector Road System Service Levels

Road Number	Road Name	Type	Current Service Level	Future Service Level
White River Ranger District, Cont.				
7160	Buck Creek	C	C	C
7174	Corral Pass	C	C	C
72	28 Mile/Lightning Cr	A	C	C
7220	Echo Lake	C	C	C
7222	Forest Lake	C	C	C
7250	28 Mile Creek	C	C	C
73	Huckleberry Creek/ Eleanor Creek	A	C	C
7315	Suntop	C	C	C
7320	W. Huckleberry	C	C	C
74	W. Fk. White River/ Martin Gap	A/C	A/C	C
7415	West Valley	C	C	C
7430	Viola Creek	C	C	C
75	Jim Creek	A	C	C
7550	East Valley	C	D	D
7710	South Prairie	C	C	C
7810	Cayada Creek	C	C	C
7920	Poch Peak	C	C/D	C/D
7930	Poch Ridge	C	C	C
7530	Lonesome Lake	C	C	C

Chapter 4
Resource Summaries

Fire

The fire protection and use program on the Mt. Baker-Snoqualmie is a service program which supports the other resource management programs identified in the Plan. The program includes all activities for: (1) the protection of resources and other values from wildfire; and (2) the use of prescribed fire to meet land and resource management goals and objectives. Fire management's role is to coordinate, plan and implement fire protection and use programs consistent with the standards and guidelines and management prescriptions.

Fire protection and use activities have a direct effect on the physical and biological environment, including air quality. Monitoring the effects of the fire management program will help determine if management practices are changing the physical and biological environment and if the cost of the program activities meet the "cost plus net value change" criteria associated with the implementation of the Forest's fire protection and use program (refer to Chapter 5, Monitoring and Evaluation Program.) The fire protection and use programs are described below.

Fire Protection Program

The fire protection program includes fire prevention, presuppression (i.e. detection, dispatching, fire danger rating, fire weather forecasting, and training), suppression, and fire management analysis and planning activities. The collective application of all fire activities required to meet the fire management direction for each management area, including fuels management, will be documented in a detailed fire management action plan to be completed within one year after approval of the Plan.

An appropriate suppression response (i.e., containment, confinement, or control) based on location, conditions, and resource values will be taken on all wildfires. Natural ignitions occurring in wilderness areas will be treated as prescribed fires until declared a wildfire. Human-caused fires in wilderness are wildfires and will receive an appropriate suppression response. The standards and guidelines outlined in the Plan are estimated to result in no increase in the number of wildfires on the forest. The acreage burned from wildfires will average no more than 150 acres per year. Fires sizes will typically be less than 5 acres though a fire in the 25-30 acre size range can be expected each year. Guidelines for the selection of appropriate suppression response for each management area will be included in the fire management action plan.

Implementation of the fire protection program involves considerable external coordination. The majority of this coordination involves formal fire protection agreements with neighboring fire suppression organizations. The Forest has reciprocal agreements with the State of Washington, Department of Natural Resources, Bureau of Indian Affairs, Puget Sound Agency, and National Park Service (North Cascades and Mt. Rainier National Parks). The Forest also cooperatively protects lands administered by the Bureau of Land Management located within and adjacent to the Forest.

Fire Use Program

The fire use program involves the planning, administration and direct implementation of prescribed fire activities for the protection, maintenance and enhancement of resource productivity.

D. FOREST-WIDE STANDARDS AND GUIDELINES

Standards and guidelines state the bounds or constraints within which all practices will be carried out in achieving the resource objectives of the alternatives. The management of the Mt. Baker-Snoqualmie is subject to all applicable laws and regulations. Standards and guidelines are intended to help the manager achieve the goals and objectives, while staying within constraints prescribed by law.

There are two categories of standards and guidelines: Forest-wide, applying to all management areas (discussed in Part D, below); and standards and guidelines specific to individual management areas (Part E of this chapter).

Development of Standards and Guidelines

The Forest-wide standards and guidelines and management prescriptions were developed according to Regional Direction, for the purpose of: 1) identifying anticipated potential direction for activities on the MBS, and 2) assist in directing formulation of the Forest's planning model and alternatives. The Forest-wide standards and guidelines contain management requirements (MR's) and other important direction.

Both the Forest-wide standards and guidelines and the individual management area (MA) prescriptions contain a goal statement, reflecting the expected results for a forest resource, activity, or land area. They provide direction emphasis for the Mt. Baker-Snoqualmie, supplementing Forest Service manuals, handbooks, and the Regional Guide. Both respond to Forest ICO's, appropriate laws, regulations, and existing direction, land capabilities, and professional judgement.

Forest-wide Standards and Guidelines and Management Area Prescriptions

Management direction for the Mt. Baker-Snoqualmie is defined by both the Forest-Wide Standards and Guidelines and the individual Management Prescriptions. The Forest-Wide Standards and Guidelines are applicable to all areas of the Forest, unless exceptions are specifically noted in an individual management prescription. The Management Prescriptions are sets of management practices scheduled for application on a specific Management Area.

Definitions

To understand the intent of the Forest-wide and MA standards and guidelines, the interpretations of the terms used are critical.

The first intent is conveyed by the word **"shall"** (also, "must" and "will"). The action is **mandatory** in all cases.

The second is conveyed by the word **"should."** With this degree of restriction, action is required unless justifiable reason exists for not taking action. This direction is intended to require a practice unless it entails unacceptable hardship or expense. Exceptions to "should" are expected to occur infrequently.

The third type of direction uses the word **"practicable"** and acknowledges that a given practice is not always feasible and practical in every situation. It is intended to encourage, but not require, a practice.

The fourth uses the word **"may"** and has to do with activities which may or may not be appropriate, depending on circumstances. This direction is intended to allow for taking advantage of compatible opportunities, or to provide for exceptions when the objectives of a particular standard can be met through alternate methods.

The following is a list of the contents of this section of Chapter 4, Part D, The Forest-wide Standards and Guidelines.

Contents for Forest-wide Standards and Guidelines

GENERAL PROCEDURES

Goal: Meet identified land, resource, and support activity goals.

1. Activities affecting forest system lands and resources will be analyzed through NEPA analysis.

2. Economic efficiency will be a consideration in forest and project level planning and development.

3. Improve net benefits of all resources by reducing unit costs through improved management efficiency and new and emerging technology.

4. Management of forest system lands, resources, and activities will be coordinated with appropriate local, State, Federal agencies, private landowners, Indian tribes, and interest and user groups.

RECREATION

Goal: Provide a broad spectrum of recreation opportunities and experiences on the Mt. Baker-Snoqualmie National Forest.

General

1. Encourage public and other agency participation in recreation planning.

2. Implement practices that will reduce costs of recreation operation and increase revenues from recreation use where cost effective to accomplish.

3. Whenever possible, other resource activity planning such as road and timber sale developments should incorporate plans to provide or improve compatible recreation facilities or services.

4. Provide public with appropriate information on recreation opportunities and knowledge of forest resource management.

5. Update the existing situation Recreation Opportunity Spectrum (ROS) map in the Forest data base or Geographic Information System (GIS) every five years.

Dispersed

1. Provide for a broad spectrum of ROS settings and recreational opportunities such as hunting, fishing, gathering forest products, viewing scenery, camping, hiking, floating, etc.

2. Inventory, evaluate, and manage dispersed occupancy sites.

3. Manage public use as necessary to protect resource values, provide a quality experience and provide for public health and safety.

4. Identify the potential change of any proposed activity on Recreation Opportunity Spectrum (ROS) classes in all project environmental analysis.

5. Evaluate opportunities to allow for expanded public recreation service through commercial outfitter-guide operations.

Developed

1. Provide public information that informs the user about recreation opportunities and how to care for forest resources.

2. Appropriate recreation facilities will be evaluated for recreation mitigation for all proposed hydroelectric projects.

3. Developed facilities will be administered and maintained to provide visitor safety and sanitation, protect facility and site resources, and provide for visitor recreation needs and convenience; while reducing unit costs. Work towards concentrating developed campground facilities in high use zones where cost and service efficiency is highest.

4. Developed facilities will be kept in a satisfactory condition, otherwise they should be closed to use, or removed.

5. The minimum level of management for any developed site will be determined by Forest Service monitoring for health and safety. The public will be expected to provide self service or to pay a user fee where such measures will help reduce net federal expenditures.

6. Evaluate opportunities for private operation of Mt. Baker-Snoqualmie recreation facilities.

7. Developments operated under Special Use Permit shall be administered to assure the permittee is following the terms of the permit.

8. Encourage year-round recreation use at winter-sports sites. Permit summer facilities that are compatible with or enhance natural resource-based recreation opportunities and in keeping with the Recreation Opportunity Spectrum (ROS).

9. No additional recreation residence tracts will be created. As the renewal date approaches on each permit, the permit will be reviewed in terms of the highest public use for land. If a determination is made that the permit site is needed for a higher public use, the permit shall be terminated and the improvements removed after appropriate notification.

   Existing permits will have the following clause included: "Where existing improvements are destroyed by fire, flood, etc., the permit may be considered for termination."

Recreation
Forest-wide S&G

Trails

Overall Objectives Applicable to the Entire Forest.

1. To provide a system of trails with routes, construction standards and maintenance standards that compliment the resource capabilities and management objectives of the area served. The system will also provide for necessary administrative access, provide for safe use on various difficulty levels of trails, and have minimum impact on soil, water, visual and other sensitive values.

2. To provide on a Forest-wide basis (not necessarily on each Ranger District) a broad spectrum of trail travel opportunities including: trails at various elevations, trails in diverse settings, and trails suitable to various kinds of users and modes of travel.

3. To proceed from the present trail system to an optimum future system as rapidly as is practicable through reconstruction, relocation, new construction, and the rehabilitation of unneeded trails to a natural condition.

4. To achieve a unified trail system, on and adjacent to the Forest, and assure that the Forest trail system complements management of adjacent land and vice-versa.

5. To assure that the trail system meets the needs of trail users, while remaining consistent with resource capabilities and land allocations.

6. To apply available funds to the highest priority trail reconstruction, construction, and maintenance projects.

7 Trails shall assume the visual quality level of the management area they pass through.

Specific Policies Applicable to the Entire Forest.

1. A broad spectrum of trails will be provided, varying in degree of ease and convenience. Trails will meet the primary objective and difficulty level standards as described in FSH 2309.18.

2. Trails may be provided where soil and vegetation, on and adjacent to the trail route, are suitable for such uses.

3. Each trail shall be managed to a particular "primary objective" (user type). If conflicts arise they will be minimized thru information and education, or as a last resort, closed to users other than the primary objective user.

4. Motorized and/or pack and saddle use of existing trails will be allowed only where the trail, as presently constructed (and soils and vegetation adjacent to the trail), can absorb such use without unacceptable damage.

In some cases the long range "primary objective" may not exist until the trail is reconstructed to that standard. Closures may exist until the trail meets the planned "primary objective" standard.

5. Existing and potential heavy use areas (focal areas) will receive special attention in planning so that necessary facilities are provided, and trails do not introduce undesirable use. Such planning will be completed prior to major construction and/or reconstruction affecting such focal areas.

6. Hiker-only trails shall, when feasible, be separated from trails open to other kinds of users. Trails open to other kinds of users should not dead-end at a hiker-only trail.

7. Trails for pack and saddle use should, when topographically possible, by-pass focal areas, such as alpine lakes, by at least 200 feet in elevation or 500 yards horizontally.

8. Trail systems should provide for loop trails and interconnecting links where consistent with other needs, constraints, and land allocations.

9. Special emphasis will be given to identification and planning for trails at elevations where the ground is usually snow free for at least half of the year.

10. Seasonal use restrictions will be used where appropriate to protect soil, vegetation, wildlife, and to manage conflicts in use.

11. Maps showing restrictions on the use of trails will be developed and made available to the public.

12. Only system trails are considered safe for use. Only system trails will be signed on the ground and shown on maps. Publishers of guidebooks will be encouraged to follow a similar policy.

13. Priority for use of trail funds will generally be as follows:

    a) Maintenance of the existing system.

    b) Reconstruction and relocation of existing trails to protect the resources.

    c) Reconstruction and relocation of existing trails for user safety and convenience.

Within these priority levels, individual projects will be prioritized based on such factors as environmental protection concerns, user safety, volume of use, and length of season of use.

14. The use of volunteers for trail maintenance will be encouraged.

15. Wheeled motorized vehicles will be prohibited on groomed snowmobile and cross-country ski trails.

Specific Policies Applicable to Certain Management Areas on the Forest.

1. Wilderness.

   a. Management objectives will be aimed toward providing a primitive recreational experience in a natural wilderness setting.

   b. Trail management objectives will be closely related and coordinated with the WROS zone to be served.

   c. A diverse spectrum of opportunities and experiences by difficulty level, mode of travel, distance and kind of destination will be sought.

   d. Visitors will be discouraged from establishing additional informal trails.

   e. Normally, no new trail construction or major reconstruction will be undertaken until an environmental analysis has been completed for the site specific project.

   f. The major objective in trail planning is to minimize the impact of trails on soils, vegetation, visual and other resource values.

   g. Trail construction and maintenance in wilderness areas using motorized equipment may be allowed only with approval of the Regional Forester. Approval will be on a one-time, case-by-case basis.

   h. Bridges will be provided only when:

      - The most suitable and logical crossings cannot be safely negotiated during primary periods of use.

      - When less formal devices (i.e., footlogs) are likely to be frequently destroyed by flood waters.

   i. Native materials (wood, local rock, bank-run gravel) that blend with the trails environment will be used where such materials are necessary as a part of trail construction.

   j. Signing will be held to a minimum and consist of rustic white oak signs showing trail destination.

2. Unroaded Management Areas Outside of Wilderness. This includes all areas of sufficient size to constitute a manageable entity that, based on classification, resource capability, and/or land use planning recommendations, will continue to be managed in a roadless condition for the foreseeable future. The following specific policies will apply to each such area:

   a. The trail system will be based on, and consistent with, the resource capability and management objectives of the area.

   b. In most areas, management objectives will aim at providing a primitive recreational experience in a near-natural setting.

c. Compared to wilderness, a greater degree of modification of the natural environment will be allowed in trail construction and maintenance, if necessary to achieve standards consistent with management objectives. Non-native materials and motorized equipment may be used.

3. Roaded Management Areas. This includes all areas that are presently roaded or that, based on classification, resource capability and/or land use planning recommendations, will be roaded in the foreseeable future. The following specific policies will apply to such areas:

   a. This Trail Plan and Trail System planning will be an integral part of project planning.

   b. Significant trail opportunities will be identified and managed as the road systems are developed. Examples of "significant trail opportunities" include:

      - Trails from a road to a significant feature or attraction such as a fishing stream or viewpoint.

      - Trails that will be snow-free for at least half the period from November through April.

      - Trails of historical significance.

      - Trails that are part of a continuous route from low to high elevations.

   c. Trails interrupted by logging or road construction will be restored or substitute trails with the same primary objective and difficulty level provided so that the mileage of trails in the same general area is not diminished. Trails will be kept open, and clear directions for users provided during interrupting activities.

   d. Where resource capabilities and management objectives permit, consideration will be given to the development of trails suitable for motorized use.

   e. Abandoned or closed portions of the road system will be considered for management as trails.

   f. Hiker & interpretative trails should be provided near most large campgrounds to provide for visitor use and enjoyment. Some of these should be suitable for barrier free access.

   g. Trails suitable for barrier free users will be provided so as to make recreation opportunities more available to them.

4. Pacific Crest National Scenic Trail. This is a part of the National Trail system by Act of Congress. It is managed for hiker and pack/ saddle use. Standards for construction and maintenance have been established for its entire length. The following specific policies will apply:

a. Where the trail passes through wilderness; location, design, construction and maintenance standards will be modified to the extent needed to meet the intent of WROS zone through which it passes.

b. In non-wilderness areas manage to meet standards of ROS zone that the trail passes through.

c. Management will be fully coordinated with the Wenatchee National Forest and the National Park Service.

d. Motorized use will not be allowed on any trail or segment of trail that terminates at the Pacific Crest Trail, unless there is a logical destination point of attraction prior to the PCNST.

e. Mountain bikes are not allowed on the Pacific Crest Trail, as per Regional Forester closure notice, August 31, 1988.

5. National Recreation Trails. The National Recreation Trails System highlights certain trails that provide outstanding opportunities for recreational use located near centers of population.

a. Potential National Recreation Trails will be identified that meet the established criteria.

b. Priority will be given to bringing existing and potential NRT trails to standard.

c. As they are brought to standard, they will be formally proposed for designation.

6. Areas Where Public Use is Prohibited or Not Encouraged. This includes some municipal watersheds and the Research Natural Areas. The following specific policies will apply to such areas:

a. In Research Natural Areas, research personnel will be consulted about any trail plans or proposals.

b. Public use of existing trails in Research Natural Areas may be allowed to continue, but increases in such use or off-trail use will not be encouraged.

c. Trails in, or on the border of municipal watersheds will not be constructed or reconstructed before local officials have been contacted.

7. Trailhead Policy. A trailhead is the place where a trail connects with a road or a navigable body of water. Trailhead use, and therefore trailhead development, varies greatly. The following specific policies will apply to trailheads:

a. Trailheads are part of the transportation system and will be developed and maintained with Forest Roads Program funds.

b. As a minimum, a trailhead will provide adequate parking for an average peak season weekend day's use. This may be provided by turnouts located within 1/4 mile of the trail. Signs and posters needed to inform the trail user should be provided.

c. Heavier use situations may include off-road parking, horse-handling facilities, toilets and garbage containers. Only under unusual circumstances will such facilities as potable water and camping facilities be provided at trailheads.

d. When a trail will be intersected by new road construction, the needed trailhead facilities should be part of the road construction "package".

8. Maintenance.

a. Annual trail management plans list the total requirements for maintaining the trail system. The following criteria are normally used in establishing priority for trail maintenance work:

Generally, the first priority for maintenance activities would be the correction of unsafe conditions relative to the management objectives. Following this, maintenance activities (see section 4.23 of FSH 2309.18) are based on the primary objective and difficulty level (See Trail Maintenance Activity Matrix, MBS Trails Handbook).

Winter Recreation

1. Each major winter recreation activity (Alpine and Nordic skiing, snowmobiling, and snow play) will have areas designated and managed to accommodate them. Other activities occurring within these areas should be limited or prohibited if they conflict with the primary activity, or if overcrowding develops.

2. Ranger District Mountain Weather/Avalanche Advisory Systems will be coordinated with the R6, NW Avalanche Center System. The Forest will provide public information and education on avalanche conditions and safety.

3. Patrol and safety may be provided through a combination of permittee and/or volunteer ski patrols. The Forest Service may provide leadership and training in such patrol activity.

4. Different skill levels of users shall be provided for and considered when designing trails and related facilities. A spectrum of opportunities for winter recreation will be maintained, including primitive dispersed opportunities with no facilities.

5. National Forest managers will coordinate with and support the Sno-Park and Snowmobile programs. Normally, provision for plowed parking will be made through these programs.

6. Alpine ski permittees will be encouraged to integrate winter dispersed recreation into their operations if and when the opportunity and demand exists.

7. Where a need for groomed trails is identified, such facilities will normally be provided through special use permits. The permittee may be allowed to charge user fees.

8. Winter recreation facilities, such as parking lots, groomed ski trails, motorized use zones, and cross country ski trails, should attempt to avoid south-facing aspects where significant wildlife winter use occurs.

Motorized Vehicle Use

1. Ensure that motorized use, including over snow type is managed to mitigate their impacts on other resources, promote safety of users, and minimize conflict. (Executive Order 11644, as amended by EO 11989).

2. Provide a diverse system of maintained trails for the enjoyment of all users and to meet the needs for administrative and resource management purposes.

3. Use ORV closures only when needed to minimize disturbance of wildlife, minimize recreation use conflicts, or to protect soil and water resources.

VISUAL RESOURCE MANAGEMENT

Goal: Provide an attractive forest setting, emphasizing the natural appearance of areas seen from major roads and recreation sites.

1. The minimum visual quality objective is maximum modification.

   a. Maximum modification provides that vegetation and land form alterations resulting from management activities may dominate the characteristic landscape. However, when viewed as background, cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain.

   b. When viewed as foreground or middleground, management treatments may not appear to completely borrow from naturally established form, line color, or texture. Alterations may also be out of scale or contain detail which is incongruent with natural occurrences, as seen in foreground or middleground.

   c. The introduction of structures, roads, slash, and other project-related debris must remain visually subordinate to the proposed composition when viewed as background.

   d. For this level of management, the reduction in visual contrast of activities and treatments with their surroundings should be accomplished within 5 years (Agriculture Handbook Numbers 462 and 559).

2. Management of the foreground of the Pacific Crest Scenic Trail will meet at least the level of the ROS environment that the trail passes through.

3. In evaluating management activities within the viewsheds (including outside the river corridors) of designated "wild", "scenic" and "recreation" rivers the following visual conditions shall apply.

River Classification	Visual Quality Objectives		
	Classified Corridor (1/4 mile foreground)	Viewshed Beyond Classified Foreground	
		Sensitivity Level 1	Sensitivity Level 2&3
Wild	**Preservation** Retention may be used for necessary recreation facilities	**Retention** middleground **Partial Retention** background	**Partial Retention** middleground **Modification** background
Scenic	**Retention** Partial retention may be used for necessary structural facilities	**Partial Retention** middleground **Partial Retention** background	**Modification** middleground **Modification** background
Recreation	**Partial Retention** Modification may be used for necessary structural facilities	**Partial Retention** middleground **Partial Retention** background	**Modification** middleground **Modification** background

4. Update Forest Existing Visual Condition (EVC) and Visual Quality Objective (VQO) mapping every five years, in the Forest data base or in Geographic Information System (GIS).

5. The Scenic Byway designation applies to the following scenic drives:

   Mt. Baker Highway Scenic Byway, and Proposed Scenic Byways on the Mt. Loop Highway and Stevens Pass Highway when designated.

   a. Recreation facilities will be planned in the roaded natural and rural recreation opportunity spectrums. Facilities will accommodate families, the elderly and will be barrier free where possible.

   b. Interpretive plans shall be prepared. Wayside exhibits and interpretive trails will be added to enhance the publics knowledge of cultural and natural features and resource management.

   c. Trails with an "easiest" hiking standard shall be planned where appropriate.

WILD AND SCENIC RIVERS

Goal: Maintain recommended rivers and streams to protect their highest classification level until Congress takes actions on preliminary administrative recommendation.

1. Recommend to Congress 30 rivers for addition to the National Wild and Scenic Rivers System. Refer to Chapter 4, Resource Summaries for a listing of these rivers.

2. Maintain or enhance the recreation, visual, wildlife, fisheries and water quality values of the existing and recommended wild, scenic, and recreation rivers.

3. Recommended wild and scenic rivers shall be managed to protect those characteristics that contribute to the eligibility of these rivers at their highest potential classification until Congress formally determines their status.

4. Encourage participation and cooperation of public and private landholders in the study and implementation of river classification on non-national forest lands.

5. In the recommended wild, scenic, or recreational river corridors, a no-surface occupancy stipulation shall be required in mineral leases.

6. Commercial outfitting and guide permits should be allowed where there is a demonstrated management and public need compatible with general public use and Limits of Acceptable Change.

7. In recommended and existing wild, scenic, and recreation river corridors, new dams, diversions, or hydroelectric power facilities shall be prohibited to the extent of Forest Service authority. Existing facilities may be maintained.

8. Each River Management Plan shall include an estimated capacity for the river using the Limits of Acceptable Change (LAC) process.

COMMUNITY AND HUMAN RESOURCES MANAGEMENT

Goal: Promote human resources, civil rights, and community development within the zone of influence of the Mt. Baker-Snoqualmie National Forest.

Management

1. Conduct compliance reviews as required by Title VI of the Civil Rights Act of 1964 and the established Forest Service standards.

2. The Forest will actively pursue the employment of the handicapped and ensure that the needs of the handicapped are considered in the design of forest facilities.

3. The Forest will participate in human resource programs that support community and economic development.

4. Provide employment opportunities for senior citizens.

5. Utilize volunteers in various activities such as in trail work, wildlife inventories, campground hosts, and other projects.

AMERICAN INDIAN RELIGIOUS AND CULTURAL USES

Goal: To assure the availability of sites and areas for religious and ceremonial use by American Indian tribes within the planning area. (Any areas and sites which contain artifacts or features will be considered cultural resources. These will undergo inventory, evaluation, protection, and enhancement as previously described.)

1. Maintain and update the "Inventory of American Indian Religious and Cultural Use, Practices, Localities, and Resources".

2. Protect confidentiality of American Indian religious and cultural use areas.

3. Identify specific sites and areas according to the nature of the religious use or ceremonial practice:
   a. Spirit Quest and legendary sites
   b. Cedar area
   c. Ceremonial flora and plant areas
   d. Cemeteries

4. Protect a portion of religious and cultural use areas as a result of allocation to management areas which maintain conditions suitable for religious and cultural use.

5. Review the "Inventory of American Indian Religious and Cultural Use, Practices, Localities, and Resources" during the scoping phase of environmental analyses.

6. Present information about planned project activities in all management areas (i.e., protected and otherwise) to religious and political leaders of tribal groups whose traditional practices might be affected.

7. Where projects will affect American Indian religious and cultural use sites, protection and mitigation measures shall be worked out with the leaders of the affected tribal groups on a project specific basis or through Memoranda of Agreement.

8. Project level protection and mitigation measures shall consider the nature of the religious site, type, and duration of use and other factors of concern to tribal leaders in determining what appropriate measures can be designed to protect site values. They shall maximize retention of purity, privacy, and isolation, consistent with overall Plan objectives.

9. In the event that religious artifacts or features are discovered during implementation of a project, follow the procedures of 36 CFR 800.II. Notify the affected tribe(s).

10. National Forest lands shall be managed to recognize and reduce social and administrative barriers to religious uses of the forest by American Indians.

ARCHAEOLOGICAL AND HISTORICAL PROPERTIES

Goal: To provide for management and protection of cultural resource values through a program which integrates inventory, evaluation, protection, and enhancement.

Inventory

1. Maintain a cultural resource overview of the Forest. The overview should summarize all previously recorded cultural resource information for the Forest, provide a framework for evaluating cultural resources identified through the inventory process, develop a research design to guide future surveys, inventories, and scientific investigations, and identify opportunities for interpretation of a range of cultural properties.

2. A professionally supervised cultural resource inventory program will be conducted, on a project specific level, for all activities which might affect resources eligible for the National Register of Historic Places, including land exchanges and facility maintenance. A systematic program of inventory of areas not affected by projects will be implemented, in order that a complete inventory of Forest cultural resources be assembled.

3. A Cultural Resource Inventory Plan will be developed to guide all inventory activities, specifying types and intensity of survey by geographic area within the Forest.

4. Results of project level cultural resource inventories shall be documented through environmental analysis for the project. Cultural resource compliance shall be documented according to the current Memorandum of Understanding between the Washington State Historic Preservation Office (SHPO) and the Mt. Baker-Snoqualmie National Forest.

5. The Forest Cultural Resource Overview site list shall be updated regularly to reflect additions to the data base. The backlog of sites that lack complete records will be reduced through a systematic program of recordation.

Evaluation

1. Evaluate the significance of inventoried sites by applying the criteria for eligibility to the National Register of Historic Places. This will be accomplished by a professional cultural resource specialist. Sites may be treated as individual properties, thematic groups, or historic districts. Give priority to those properties that may be affected by project activities. Evaluations will be coordinated with the criteria contained in the Cultural Resource Overview and State Historic Preservation Plan.

2. Consider the effects of all National Forest undertakings on significant cultural resources.

3. Develop management plans, in consultation with the Washington SHPO, Advisory Council and other interested parties as defined in 36 CFR 800, for National Register-eligible sites. Plans are to specify measures to protect and maintain the cultural integrity of the sites, objectives for management

of the setting, identify levels and types of other resource uses compatible with the cultural values of the sites, an interpretive design if appropriate, and a schedule to carry out the objectives of the plan. Adaptive or compatible modern uses of historic properties, such as use as Forest Service administrative facilities, should be encouraged. Priorities will be established based on the significance of the resource and the level of on-going impacts.

4. Develop Programmatic Memoranda of Agreement and/or management plans (in consultation with the SHPO) for the evaluation of classes of prehistoric and historic resource properties found on the National Forest. Examples include mining improvements, timber claim cabins, prehistoric lithic scatters, stripped cedar trees, railroad logging sites.

5. Initiate a systematic program to nominate cultural resources that meet the criteria for eligibility to the National Register of Historic Places.

Protection

1. Until proper evaluation occurs, all known cultural resource properties shall be protected.

2. Develop measures, in consultation with the Washington SHPO, Advisory Council, and other interested parties as defined in 36 CFR 800 to protect significant sites from adverse effects due to Forest development or management practices. Avoidance of impacts (leaving resources undisturbed) shall be explicitly considered for all significant resources. Other measures may range from avoidance of the site and protection of its environmental setting to data recovery or recordation to Historic American Buildings Survey or Historic American Engineering Record standards. Actual measures will be determined through Programmatic Memoranda of Agreement or during consultation for specific projects.

3. Confidentiality of cultural resource site location shall be maintained as required by Section 304 of the National Historic Preservation Act.

4. Based on management plans, protect eligible cultural resources from degradation due to public use and natural deterioration. Protection activities may include, but are not limited to, scientific study and collection (as outlined in a data recovery plan), the use of fences and barriers, proper use or removal of signs, stabilization techniques, closure orders, patrol and site monitoring, maintaining site anonymity, and gaining public understanding and support through education.

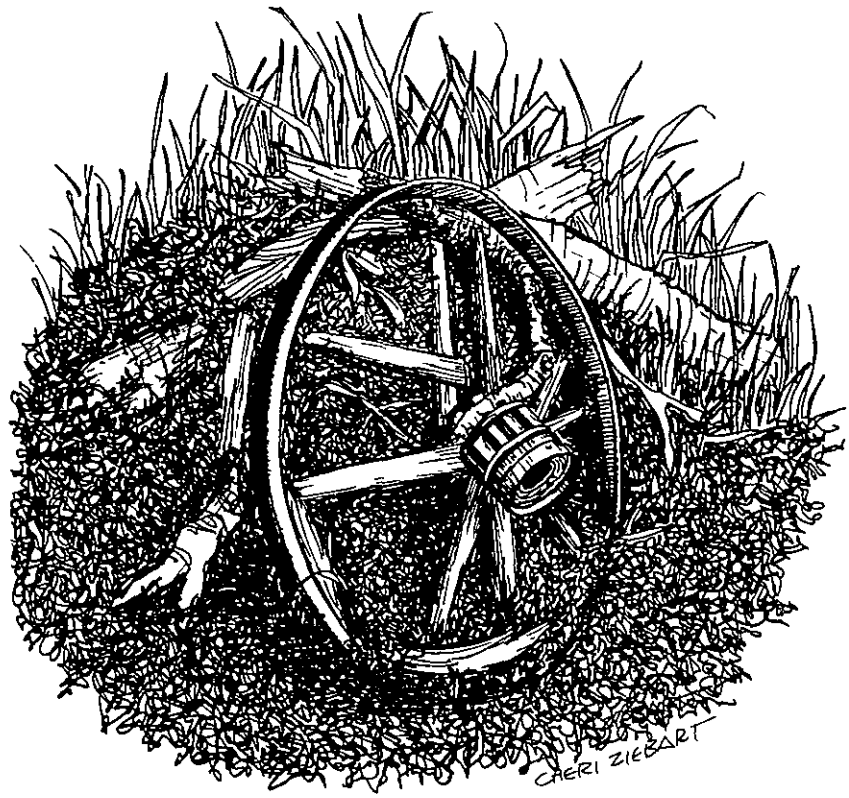
5. Decisions on the maintenance level for eligible historic structures will be based on an analysis of utility, interpretive value, public interest, existing site or area allocation, funding sources, and existing agreements.

6. Wildfire suppression plans and prescribed burning prescriptions to be applied in areas of known or potential cultural resource properties shall comply with 36 CFR 800. A cultural resource inventory and consultation with the State Historic Preservation Officer may be required.

Enhancement

1. The Forest shall foster active programs of research through permits to, and cooperative agreements with, qualified institutions, organizations, and individuals; and by identifying opportunities for research. Such research should meet Forest Service, State, and/or scientific needs.

2. In preparing cultural resource management plans (Evaluation # 3 above), consider the interpretation of properties for the recreational use and educational benefit of the general public. The measure of suitability should be based on accessibility to the public, feasibility for protection, condition of the property, compatibility with other resource management activities within or adjacent to the area, thematic representation, and value to public groups. Preferred methods include brochures, signs, and self-guided tours.



WILDERNESS

Goal: The goal of wilderness management is to feature naturalness, provide opportunities for solitude, challenge, and inspiration, and within these constraints to allow for recreational, scenic, scientific, educational, conservation, and historical uses. Permitted but non-conforming uses specified in the Wilderness Act will be carried out under restrictions designed to minimize their impact on the wilderness. The criteria used for conflict resolution will be to preserve and protect the wilderness resource.

Wilderness exemplifies freedom, but is defined more by the absence of human impact than by an absence of human control. Management therefore shall seek to minimize the impact of use rather than use per se. A high priority, however, shall be placed on spontaneity of use and as much freedom from regimentation as possible while preserving the naturalness of the wilderness resource and the opportunity for solitude, primitive recreation, scenic, scientific, and historical values.

In carrying out this goal, a policy of nondegradation management shall be followed. The nondegradation policy recognizes that in wilderness one can find a range of natural and social settings from the most pristine to those where naturalness and opportunities for solitude have been diminished by established uses. It is the intent of this policy to assure that appropriate diversity and existing wilderness character are maintained. Further intent is to ensure that all of the most pristine areas will not be reduced to the minimum acceptable standard of naturalness simply to disperse and accommodate more use.

Managers shall administer the wilderness using five wilderness Recreation Spectrum classes: Transition, Trailed, General Trailless, Dedicated Trailless, and Special Areas. This classification is a refinement of the primitive and semi-primitive nonmotorized ROS classes. Within each of these is described the character of activities expected within the class and standards to guide management.

Recreation - To provide a spectrum of opportunities for wilderness recreation featuring a natural environment, solitude, physical and mental challenge, and inspiration consistent with preservation of wilderness values.

Wilderness provides unique and highly favored recreational experiences, however, recreational use of wilderness must be closely managed and monitored to assure that degradation of resource values does not occur. The following standards and guidelines are established to help achieve this end.

1. If monitoring of on-site conditions indicates that wilderness resource values are being degraded or changed to a point that limits of acceptable change are being closely approached, management actions must be implemented to reverse the declining trend. Recreational visitor activities may be regulated, reduced, or excluded from specific sites or areas. Management actions designed to solve user impact problems will generally be fully implemented before entry quota systems are employed.

2. Manage use within the limits of acceptable change for the five Wilderness ROS classes. Set specific site and area carrying capacities for heavy use areas to meet established standards.

3. Regulations limiting the number of visitors to maintain established Limits of Acceptable Change should be put into effect only after other reasonable measures to minimize impacts have been considered. Non-regulatory management measures may include: improve, maintain, or lower standards for access roads, trailhead facilities, and trails; advertise special attributes of selected areas; identify the range of recreation opportunities in surrounding areas; educate users about basic concepts of protecting wilderness ecosystems; advise users of little-used areas and general patterns of use, and etc. Limitations on numbers of users should be applied to particular heavy use locations where carrying capacity levels are exceeded before they are applied to the entire wilderness.

4. If it becomes necessary to establish priorities for wilderness visitation, highest priority should be given uses which (1) least alter the wilderness environment, and (2) are dependent upon the wilderness environment. Other users should be encouraged to visit areas outside the wilderness.

5. Proposed temporary improvements must be necessary for the protection of the wilderness resource and not for the convenience of users. Authorized improvements shall be constructed of natural materials, and designed to harmonize with the environment.

6. Commercial outfitting and guide permits should be allowed where there is a demonstrated management and public need compatible with general public use and limits of acceptable change.

   The number of permits issued and the amount of use allocated to permit holders should be evaluated periodically to assure an appropriate balance is maintained between general public use and outfitter use. Outfitter guides should not be allowed to dominate the use of an area or occupy favored campsites to the point that use by the general public is limited or constrained.

   a. Outfitter-guide camps should be located away from other popular visitor campsites to reduce social resource impacts.

   b. Outfitter-guide permittees should actively assist in the education of wilderness visitors, within the scope of their operations.

   c. Outfitter-guide operations will generally be required to adhere to established party size limitations and use conditions specified for each wilderness. Any deviation from catching or party size limitations must be documented in the annual operating plan and approved by the District Ranger.

7. Recreation visitors should not be permitted to cache or store equipment, personal property, or supplies in wilderness. Caching is defined as leaving equipment unattended for more than 48 hours.

   The following criteria should be used when considering waivers to allow caching of equipment in wilderness for a period longer than 48 hours.

1. Granting of the waiver is part of a managed corrective action aimed at getting control of historical occupancy and use problems.

2. The requested area is not highly controversial with the public.

3. The requested area is not located where there is frequent competition for available sites.

4. The site can accommodate the planned use.

5. The waiver will not exceed a length of stay prohibited by another order, ie: 14 day limit.

6. The site is not located in high visibility areas such as trail foregrounds, Mountain passes, meadows, or lake shores.

7. The waiver can be monitored for compliance.

8. The waiver will facilitate an important wilderness enjoyment purpose, for which reasonable alternatives are lacking.

8. A range of management tools may be used to reduce conflicts and impacts.

Possible Management Actions:

When analysis of visitor use levels and monitoring results indicate management action is necessary to solve resource impact problems, a process will be followed to select the appropriate management actions.

Areas will be field checked when inventory or monitoring data show that resource standards are being approached and the trend is downward toward greater deterioration. The field review will determine if the indicators were properly measured and if the indicators accurately reflect the resource conditions.

Tables 4-17 list a range of potential management action depending on the specific circumstances that may be successful in reversing deteriorating conditions. The actions are listed in order of descending priority.

The emphasis in selecting management actions will focus on choosing actions which will be least intrusive to wilderness visitors, yet effective in resolving problems. In cases where problems are extensive, complex, and very visible, management actions will be required that will have some effect on visitors freedom to use certain areas.

In areas where resource impact has been severe, rehabilitation and restoration work will be accomplished to speed up the natural recovery process.

Should the management actions implemented not result in improving conditions, more restrictive and intensive management actions will be instituted. This progression will continue down through the sequence of management actions until the problems are resolved.

Management actions selected, or the extent to which an action is implemented, should also be in accord with the appropriate WROS Class of the area involved.

Table 4-17
Potential Management Actions to Improve Campsite Conditions
Descending Order of Implementation

1. Education of users outside wilderness
2. Information outside wilderness, at trailheads
3. Contact repeat users such as organized groups, clubs and associations, etc.
4. Wilderness Ranger contacts
5. Reroute trails away from lakes
6. Prohibit stock in campsites
7. Restrict camping near lakes, streams, and meadows
8. Prohibit campfires in specific areas
9. Equipment requirements
10. Install resource protection facilities on durable sites
11. Limit party group size
12. Length of stay limit in problem areas
13. Close campsites to specific users
14. Rehabilitate damaged areas
15. Special law enforcement efforts
16. Campsite closure
17. Campsite permits
18 Entry quota permit system

Reduce Campsite Density

1. Education of users outside wilderness
2. Information outside wilderness, at trailheads
3. Contact repeat users such as organized groups, clubs and associations, etc.
4. Campsite obliteration and rehabilitation
5. Prohibit camping within prescribed distances of trails, lakes, streams, and meadows
6. Make access to problem areas more difficult
7. Campsite closures, may be seasonal
8. Closure of large areas to camping

Reduce Trail and Campsite Encounters

1. Education of users outside wilderness
2. Information outside wilderness, at trailheads
3. Encourage use outside peak periods
4. Limit group size
5. Seasonal campsite closures
6. Restrict camping near trails
7. Close campsites to certain users
8. Close specific areas to camping
9. Change trailhead and access conditions
10. Length of stay limits
11. Allow only one-way travel on some trails
12. Campsite permits
13. Entry quota permit system

Improve Vegetative Conditions Impacted by Recreation Stock/Pack Animal

1. Education of users outside wilderness
2. Information outside wilderness, at trailheads
3. Allow no hay or unprocessed grain
4. Require use of supplemental feed
5. Limit total number of stock per party
6. Limit group size
7. Prohibit stock in specific areas
8. Prohibit stock in campsites
9. Eliminate facilities that are attractions
10. Provide facilities where impacts should be concentrated on durable sites
11. Allow no stock to feed within specified distance of lakes, streams, and wet areas
12. Seasonal closures
13. Close drainages to stock on a rotating basis
14. Length of stay limits
15. Closure of large ares to stock

Wild and Scenic Rivers - Sections of rivers within wilderness are being recommended for designation as Wild Rivers under the Wild and Scenic Rivers Act. The classification of river segments as "Wild" rivers is compatible with wilderness designation. Management decisions regarding land use or appropriate recreation activities will be directed by the act which has the most restrictive language regarding a specific question. For example, impoundment of rivers, which could be approved by the President under the Wilderness Act, Section 4(d)(4), would not be authorized on a river in wilderness designated "Wild" under the Wild and Scenic River Act, Section 7. Recreation use of a designated "Wild" River in wilderness may be regulated, if such use is creating impacts on wilderness resources that is not in keeping with the Wilderness Act. Management activities and recreation use impacts that occur on wild river segments within wilderness will be monitored for compliance with both Acts.

Visual Quality - To develop facilities and conduct management activities to create acceptable visual conditions in keeping with preservation of the wilderness character.

Natural events and processes such as rock slides, avalanches, tree mortality due to insects and disease, or fire, will change the visual conditions present. These natural occurrences will not be considered as detrimental to Visual qualities. Special management actions would not be taken to mitigate or repair visual damage.

Signing - Provide signs only where necessary to protect the wilderness resource and for basic visitor protection and orientation. The objective is to install and maintain the <u>least</u> possible number of signs.

1. Rough cut, chamfered edge, unfinished white oak shall be the standard sign material in the wilderness. Lettering may be routed and lightly scorched. Pacific Crest National Scenic Trail logo will be branded on white oak.

2. To facilitate long-term mounting and to minimize the visual impact, white oak signs should be placed on trees wherever possible. Where posts are necessary, use untreated native materials that will weather over time.

3. All existing signs should be individually evaluated to determine if they meet the sign management objective. Signs that are needed to meet management objective, but are not of the current design, should be replaced when the existing sign is no longer serviceable. The need for signs should be minimized by developing accurate map brochures and other user information systems.

4. Mileages shall not be placed on signs within the wilderness.

5. Signs needed for management and regulation of use (including site restoration areas, trail closures, and directions to toilets) shall be the minimum size possible to be easily seen, and shall be installed to minimize both physical impact upon the wilderness resource and psychological impact on the user. Whenever possible, universal symbols should be used on signs and signs should be worded to have positive psychological tone (i.e., "Please Camp Elsewhere" rather than "No Camping"). Signs shall be removed when their purpose has been accomplished.

6. Signing at wilderness trailheads may consist of trail direction signs, wilderness boundary signs, and essential official information or interpretive displays such as fire prevention, regulations governing use of the wilderness, and suggested wilderness behavior. Trailhead signs may include destination mileages.

7. Provide the minimum number of directional signs possible. These signs should be limited to one directional or destination indicator per leg of the trails at a junction.

8. Signs should not be used for directions to or within "General" or "Dedicated Trailless" areas.

9. Wilderness boundary signs should be placed at sufficient locations and distances so that outside activities will not encroach upon the wilderness. In the case of other management activities, project planning should include boundary posting.

10. Signs should not be provided for on-site interpretation within the Wilderness.

Administration - Preserve the integrity of the wilderness resource; provide uniform and consistent administration by all Ranger Districts; conduct necessary administrative activities most protective of the wilderness resource.

1. Wilderness Management implementation schedules shall be prepared yearly for each individual wilderness. These plans shall state specific local actions (prioritized pending yearly budget allocations). Action plans shall be approved by the District Ranger.

2. Coordination between adjoining National Forest and National Park Service units is expected to insure reasonable uniformity where necessary.

3. All administrative activity shall be conducted to minimize impacts on the social and biological resource. Installation of equipment for monitoring aerosol chemistry, precipitation, etc., necessary to assess air pollution impacts on AQRV's shall only be located inside wilderness areas when no representative locations can be found outside the wilderness. Permanent sample plots will be located away from commonly used areas. Field projects should be closely supervised to insure consistency with the goal and objectives of this plan.

4. Facilities such as cabins, trail shelters, or corrals, shall not be constructed or maintained for administrative purposes. The wildernesses of the Forest are not of sufficient size or of sufficient logistical complexity to warrant these structures in wilderness.

5. Coordination should be maintained with all state, county, and federal agencies as well as private landowners that use, or influence use of the wilderness, to promote understanding of the purposes of wilderness.

6. Entrance self registration or monitoring devices should be operated at wilderness trailheads.

7. Forest management activities outside of wilderness that influence the administration and visitor use of wilderness, shall carefully consider potential negative impacts on wilderness resources in the planning phases.

8. There will be one trained wilderness ranger per 30,000 acres or 20,000 visitor days of use.

Trails and Travel - To provide a range of challenges to wilderness users through a spectrum of access opportunities, including cross-country travel and trails of varying difficulty for horse and foot travel; to minimize physical and visual impacts upon the land, conflicts between users, and concentrations of use harmful to the wilderness resource.

1. Trails shall be designed, built, relocated, reconstructed, and maintained to provide a service appropriate for the planned use (as shown on the Wilderness WROS map). These trails shall comply with objectives of this plan.

2. Trails shall be managed to maintain a balanced spectrum of travel opportunities according to difficulty, mode of travel, distance, and type of destination. Standards for trail encounters within each of the five Wilderness WROS classes shall be adhered to. Segments that currently do not comply with the standards shall be identified. These segments should be listed in order of priority for meeting standards.

3. Trails should be reconstructed, rerouted or eliminated as needed to protect the wilderness resource and meet the objectives of each WROS class. Priorities should be identified in the trail plan and implementation schedule, Appendix E.

4. The practice of placing temporary plastic ribbons, cairns (not including summit carins), or other devices by visitors to mark informal trails shall be discouraged through visitor information. Such markers shall be removed as they are found. Climbing wands (when in use) are an exception. Wands should be removed after use by the climbing party.

5. Where other means are not practical to protect the wilderness, cairns may be located and maintained by the Forest Service.

6. Trail and trailhead construction and maintenance activities shall be accomplished with minimum impact on the wilderness resource and on the experience of wilderness users. Trailhead facilities shall be compatible with use and character of the area served.

7. Stakes and ribbons used to identify trail construction or reconstruction locations or other administrative activity shall be temporary and removed immediately after project completion. Tree blazes may not be used for pre-construction trail location. They shall be avoided to mark existing trail locations except where they are absolutely necessary in difficult to locate situations where other means of marking a trail are not possible.

8. Bridges and footlogs may be provided only when no other route or crossing is reasonably available for essential user safety. Bridges should not be installed for user convenience or installed to extend use season unless necessary to meet wilderness management objectives. Natural materials shall be preferred.

9. Trail locations and relocations should avoid wet areas and meadows. New trail drainage structures should be constructed of natural materials and designed to minimize their visual obtrusiveness. Drainage structures of non-native material will be replaced when trail reconstruction becomes necessary and will be hidden from view until replaced. Natural materials should be used whenever feasible.

10. Existing trails no longer compatible with the objectives of this plan should be abandoned and returned to as near a natural state as possible. Abandoned trails should be monitored periodically.

11. When possible, through-trails should be routed away from areas of concentrated use, such as lakes and popular campsites, to avoid unnecessary visitor contacts and environmental impacts.

Vegetation - Maintain the system of natural processes that governs the distribution of plant communities and ensure that natural biotic communities remain undisturbed except by those natural processes.

1. Non-native plant species should not be introduced. The possibility of accidental introduction through the use of pack and saddle stock should be minimized by prohibiting the use of hay and unprocessed grain as supplemental feed and encouraging the use of processed, weed-free feeds (i.e., pelletized rations).

2. Campfires should be prohibited at heavily used locations if analysis indicates that firewood is being used faster than natural accumulation. The supply of firewood shall be monitored at sites identified in yearly operating plans. If the amount is declining, use should be prohibited altogether.

3. The thrift, density and vigor of natural vegetation shall be monitored to determine the extent of alteration of the natural biotic communities by off site sources of air pollution. If confirmed changes are measured, pollution sources shall be identified and corrective actions initiated through provisions of the Federal Clean Air Act.

Collection of Resource and Use Information - Make collection of data in a non-obtrusive manner consistent with the preservation of the wilderness resource, (a) gain information needed to achieve and monitor the attainment of the objectives of this plan; and (b) acquire baseline knowledge needed to assess long-range natural changes, and direct and indirect human influence on the wilderness ecosystem.

1. The collection of resource and use information should be annually coordinated between Ranger Districts.

2. Site specific information concerning the location and amount of impacts on soil properties, water quality, vegetation, visibility and other physical characteristics of the areas resulting from recreational use or off-site pollution sources should be collected, maintained, and used in making future management decisions. The following are priorities and locations for assembling resource information in descending order of importance.

    a. Vegetation, soil condition, and trend information in heavily used camp areas near trails and at other impact areas, such as stock hitching areas, that appear to be near the limits of acceptable change.

    b. Baseline visibility conditions within those wilderness areas designated as Class I areas.

    c. Baseline conditions of water chemistry, vegetation condition, and aquatic ecosystems within those areas designated as Class I areas.

    d Baseline conditions of visibility, water chemistry, vegetation condition, and aquatic ecosystems within those areas designated as Class II areas.

    e. Vegetation and soil condition information in areas having high potential for resource degradation in the future.

    f. Baseline vegetation and soil information should be collected using permanent transects in camps, trails, and other areas that currently appear to be well within acceptable standards, but have some potential for future degradation.

3. Quantifiable information concerning the amount, season, and pattern of recreation use should be collected and maintained (including information necessary for RIM reporting) for use in making future management decisions. The following are priorities for obtaining use information: overall statistics required for annual RIM reporting; trails accessing the heavily impacted sites; and Transition Class areas.

4. University and other government researchers should be encouraged to conduct studies and collect additional data to assess recreation impacts and aid in establishing and revising carrying capacities.

Scientific Study - To provide for, and encourage scientific study dependent on a natural setting, that seeks to explain wilderness phenomena, and conducted in an unobtrusive manner consistent with preservation of the wilderness resource.

1. Research projects require Chief of the Forest Service or Regional Forester approval. Only those applications for research that are wilderness dependent and compatible with the goals and objectives of this plan shall be recommended for approval. Research activities that adversely affect the wilderness resource, the experience of users, or conflict with other wilderness objectives shall not be recommended.

2. Research that helps resolve wilderness management problems or basic research on wilderness shall be given highest priority, encouragement, and cooperation as administrative time and funding permit.

3. Data collected for management purposes, such as use figures and ecological data, should be made available to scientists for research purposes.

4. All research projects which require public contact, specimen collecting, ground reference marking or exemption from any regulations shall be conducted under a special-use permit.

Public Information - Make information about the wilderness, including management goals and objectives, available to the public to provide for and foster understanding of the natural processes which occur in the wilderness.

Actively attempt to direct use incompatible with wilderness to alternative areas by orienting the public, Forest Service employees, and users to the wilderness philosophy.

Encourage user behavior (No Trace ethic) which minimizes resource impacts and emphasize compliance with requirements or regulations.

1. Wilderness rangers, receptionists, and other Forest Service personnel who have contact with the public concerning the wilderness should be acquainted with wilderness philosophies, management goals, and current conditions within the wilderness. In contacts, they will direct non-wilderness activities to alternative areas, encourage suitable wilderness behavior, and create additional awareness, understanding, and appreciation of wilderness. While visitor contact may range from frequent to rare (depending on WROS class), the effect of contacts on user solitude or adventure should be minor.

2. Printed materials should contain information on wilderness management goals. Publishers and authors of trail, climbing, and other informational books should be encouraged to include minimum impact and other wilderness management messages in publications. Media contacts should be informed of new management goals and decisions as well as wilderness philosophies pertaining to the wilderness.

3. A wilderness map/brochure may be developed as needed. Supplemental publications may be developed and existing publications revised periodically to keep them current with management decisions and conditions.

4. Only trails that appear on the system trail inventory should be shown on Forest Service publications. Publishers of maps and guidebooks should be encouraged to follow a similar policy. All trails on trail inventories do not need to be shown on, or in guidebook publications.

5. Public involvement and user awareness programs should be used in solving management problems and to help gain acceptance of solutions among users, not to promote use per se.

6. Schools, colleges, and organized groups should continue to be involved in volunteer programs. Cooperating volunteers should be encouraged to assist managers in monitoring use, collecting and evaluating data, educating visitors and performing trail or revegetation projects.

Archaeological and Historical Properties - To recognize that cultural resources within and relating to the wilderness are a valuable, nonrenewable resource. To identify, evaluate, preserve, protect, and enhance these resources in compliance with federal and state laws and Forest Service policy.

1. All structures shall be evaluated for their historical significance, in accordance with 36 CFR 60.

2. Decisions to maintain, abandon, or remove structures which meet the criteria for the National Register shall be made in consultation with the State Historic Preservation Office, Advisory Council on Historic Preservation and other interested parties as outlined in 36 CFR 800. Abandoned structures should be allowed to deteriorate naturally. Retained or maintained structure shall be managed to have a minimum impact on the wilderness resource.

3. Decisions to remove structures shall be documented in an Environmental Assessment. Removal shall be by a practical method compatible with the goals of this plan and the site shall be restored to as natural a condition as is practical.

Fish and Wildlife - To provide habitat most conducive to a natural distribution and abundance of native species of fish and wildlife by allowing natural processes to shape habitat and interactions among species, and to encourage hunting and fishing practices in a manner consistent with the preservation of wilderness values under the Wilderness Act [Section 4(d8)].

1. The Forest Service should continue to work closely with the Washington Departments of Wildlife and Fisheries in all aspects of fish and wildlife management. Ranger District action plans shall address any specific coordination needs. Forest recommendations will be predicated on need for protection and maintenance of the wilderness resource, including fish and wildlife and their respective habitats. Hunting, fishing, and trapping shall be permitted in accordance with State Law under the same restrictions as other recreation use of the wilderness.

2. Manage to allow natural ecological succession, including natural infestations of insects, to operate freely in so far as they do not endanger significant resources outside of the wilderness.

3. Native species shall be maintained, with special emphasis on the preservation of threatened or endangered species, plus designated management indicator species and their habitats. Fish or wildlife indigenous to an area, may be re-established if previously eliminated by the influence of man.

4. Discarding of food or garbage that tends to alter the natural feeding behavior of wildlife should be discouraged through visitor education or regulation.

5. Fish stocking shall be allowed to continue where it is an established practice , however fish stocking may be reduced or stopped as one of a series of management steps designed to bring use within limits of acceptable change. Stocking should emphasize native species. Those water bodies that are naturally fish free, and where fish stocking is not an established practice, shall not be stocked.

6. Fish stocking of individual water bodies shall be limited to those methods used prior to establishment of the wilderness. Aerial stocking may be by fixed wing or helicopters. A record of fish stocking shall be developed and maintained, including an inventory of stocking dates, species and methods used.

7. Native species of fish should be favored in waters with a history of supporting such species. Waters known to contain native species should be identified in a stocking inventory.

8. Fire shall be allowed to play a more natural role in maintaining habitat diversity to insure a natural abundance and distribution of native wildlife species.

9. Improvements including habitat manipulation necessary for fish/wildlife management and in existence prior to designation are permitted, provided work is performed in a manner exerting the minimum impact on wilderness naturalness and solitude. Chief's approval is necessary.

10. Trails and camping areas shall avoid known habitat components including escape and thermal cover, goat kidding areas, travel corridors, mineral licks and others where human activities have been identified as disrupting use of the habitat. Existing trails and camps should be relocated to avoid harassment in these areas.

Livestock Use - To allow utilization of forage by recreation pack and saddle stock to the extent it does not jeopardize wilderness values.

1. Livestock use shall be managed so that native plant species will be maintained with special emphasis on the preservation of threatened or endangered species.

2. Available forage shall be used according to the following order of priority: wildlife, administrative livestock, recreation livestock, commercial packers, and commercial grazing allotments.

3. Pack and saddle stock shall be required to rely on processed hay or grain, or livestock feed (certified weed free).

4. Recreational livestock use on trails shall be limited to those identified as open and maintained for livestock use. The public should be made clearly aware of trails open and closed to livestock use. Information shall be available from administrative offices, trailheads, information brochures and all maps. Llama's will be considered as stock or pack animals, although requiring different management than horses.

5. Permanent corrals shall not be permitted for either public or commercial livestock. Hitch rails, ropes, and hobbles are the recommended methods.

6. Develop setback standards from lakes for grazing, hitching, tethering or hobbling of any pack or saddle stock.

Commercial Use - To allow utilization of forage for commercial allotments to the extent it does not jeopardize resource values and is in accordance with existing rights.

1. Because of vegetative changes, grazing allotments shall be evaluated to determine if they are capable of being continued as a viable commercial grazing allotment. If they are no longer capable, the allotment shall be terminated when the permittee no longer desires to use the area and/or relinquishes his permit. The available forage shall be allocated to wildlife and recreation livestock needs.

2. With respect to WROS Class, commercial stock should not be permitted to travel through Dedicated Trailless to reach permit areas.

Water - To preserve water bodies and stream courses in a natural state with *minimal modification or human and animal caused contaminants.*

1. Except as provided for in Section 4(d)(4) of the Wilderness Act, watersheds shall not be altered or managed to provide increased water quantity, quality, or timing of discharge.

2. Short-term weather modification activities which will produce only occasional, incidental, temporary, or transitory changes in the weather with carry-over effects on the ground lasting only a few days beyond the actual seeding period may be permitted. Long-term weather modification *programs producing repeated or prolonged changes in the weather during any* part of successive years and having substantial impacts on the wilderness resource shall not be permitted.

   Prior to any weather modification within the wilderness, formal application *must be filed and be approved by the Chief of the Forest Service.* The proponents must, through an environmental analysis accompanying their application, provide reasonable, scientifically supportable assurance that their activities will not produce permanent or substantial changes in natural conditions, nor will they include any feature that might reasonably be expected to produce conditions incompatible in appearance with the environment or reduce the values for which the wilderness was created.

3. Water yield measurements (including snow survey) shall continue to be read from the air or from the ground by primitive means, except as provided in for in the FSM.

4. Livestock and human use shall be regulated to maintain existing water quality levels equal to or exceeding Washington State Class AA and lake water quality standards. Any water body found to be below standard should be restored to the prescribed quality. See WAC 173-201-045 for standards.

5. Human activity should not influence the natural quality of any waters within wilderness beyond temporary changes that return to normal when activity ceases.

6. Constructed facilities such as trails or high-use campsites have high potential to result in accelerated erosion rates that are detrimental to water quality. Areas used by recreation visitors will be closely observed for evidence of accelerated erosion. Water sources and water bodies near campsites should be observed for evidence of soap, other chemicals, and biological contaminants that may be introduced by human activity.

7. Wilderness Action Plans will identify management actions to be implemented to correct water quality problems. Methods will be developed in the future to monitor physical, chemical, and biological changes in water quality.

Soils - To ensure that the physical properties of the soils and rate of erosion will not noticeably be altered from conditions naturally occurring and to allow processes of soil formation to operate unaltered by human activity.

Air - Maintain aerosol concentrations and particulate levels over the wilderness areas at levels that do not adversely effect identified Air Quality Related Values for each area.

1. Maintain an active role in the review of Prevention of Significant Deterioration Permit applications that have potential to impact wilderness areas.

2. Impacts on visibility and other AQRV's will be considered as a prescription perimeter when permitting natural ignitions to be used to accomplish prescribed fire objectives.

3. For further direction see the Air Resource section on page 4-XXX .

Mining and Minerals - To assure the rights of mineral claimants as specified in the Wilderness Act, while insuring that their activities create the least possible impact upon the wilderness resource.

When proposed mineral-related activities require the use of mechanized or motorized equipment or will cause impacts to the wilderness characteristics, a plan of operation must be submitted, processed and approved. During the evaluation of such a proposal not only will the environmental consequences be assessed and valid existing rights to conduct such activity confirmed prior to approval, but a determination will be made as whether the use of such equipment is reasonably necessary for and incidental to the level of exploration or development activity being proposed.

Management objectives for the administration of mineral activity in wilderness are as follows:

1. Mineral-related activities will be administered in compliance with all appropriate laws, regulations and Forest Service policy concerning wilderness management and the mining and mineral leasing laws.

2. Those conducting mineral related activities will be required to meet all Federal and State water quality standards, and will be required to reasonably minimize any adverse impacts to wildlife habitat and the wilderness characteristics of the area.

3. In keeping with any valid existing rights to operate mining claims or mineral leases, administrative efforts will be made to minimize any conflict between the mineral and the recreation users of wilderness areas.

4. When mineral-related valid existing rights have been confirmed, they will be recognized; and our policy will be to encourage and facilitate those activities while ensuring any adverse impacts to wilderness are minimized. In meeting this objective the technological feasibility and the cost of implementing any enforceable controls will be considered and kept to a reasonable level.

5. As-time permits or as wilderness-impacting activities are proposed, valid existing rights on all unpatented mining claims located within wilderness areas will be evaluated. As part of the validity determination process, mining claimants will be contacted and given an opportunity to participate in that process.

6. Rockhounding shall be treated as are other recreational activities within wilderness, and be regulated or restricted should damage to wilderness values occur.

Land Occupancy and Structures - Maintain the wilderness free from facilities and structures, except those necessary to protect the wilderness resource. Management objectives set forth in this plan and those exceptions permitted by Section 4(d) of the Wilderness Act shall be met.

1. All drift fences should be removed and less obtrusive methods for constraining livestock, including hitch rails, hitch ropes, or picketing methods used.

2. No roads, powerlines, telephone lines, water flow maintenance structures, reservoirs, or other improvements shall be permitted; except as authorized under Section 4(d) and 5(a) of the Wilderness Act.

3. Current water diversions should not be expanded. They should continue to be maintained by primitive means, unless NEPA analysis indicates that the work would cause unacceptable resource damage.

4. Occupancy, structures and use of motorized or mechanized equipment related to legitimate mining prospects shall be permitted to the extent allowed by law and regulations. Every reasonable effort should be made through the operating plan to minimize their effect on the wilderness resource.

5. Lands classified in ownership Group 1 should be retained or acquired as directed.

Wilderness
Forest-wide S&G

Fire Management - To permit natural fires to exert their effects on the vegetative patterns within the wilderness without endangering public safety or values outside the wilderness; to use suppression techniques which result in the least possible evidence of human activity; and to provide for a fire protection strategy which achieves the resource management objectives at least cost.

1. Naturally occurring fires shall be permitted to burn in specific areas, if they meet the prescription parameters for the zone. All naturally occurring ignitions are considered prescribed until declared wildfire.

2. A suppression decision matrix shall be used to determine appropriate suppression actions on fires. These decisions should be documented when the fire starts and should be reviewed by the District Ranger periodically throughout the duration of the fire. The most cost-efficient tactics within the goals and objectives of this plan should be utilized.

3. A prevention program, consisting of education and enforcement activities, shall be directed at maintaining a level of accidental fire occurrence not to exceed the current level of fires per year measured by a 10 year mean.

4. A public education program should be undertaken to explain the natural role of the fire in the wilderness ecosystems. The program should be undertaken before any prescribed fire is allowed within the wilderness.

5. Retardant may be used to contain any fire which exceeds the prescribed intensity levels and threatens acreage limitations or adjacent management areas.

6. Retardants with "fugative" color are preferred when available. These products begin with an orange-brown color and then become colorless in three to five days.

Aircraft

1. Private and commercial aircraft shall be discouraged below 2,000 feet above ground level.

2. Military aircraft shall be discouraged from overflight training missions.

3. The landing of aircraft within the wilderness is prohibited. Air dropping supplies is also prohibited. Exceptions may be granted for emergencies, significant administrative purposes, and fish stocking.

Search and Rescue - Search and rescue activities on National Forest Lands come under the jurisdiction of the County Sheriff in the county where an incident has occurred. The role of the Forest Service is to provide assistance, when requested, within the scope of the 1962 Memorandum of Understanding between the Forest Service and the Washington State Sheriff's Association. A supplement to this agreement applies to winter search and rescue situations at Stevens and Snoqualmie Passes. Specific District procedures should be included in Annual Wilderness Action Plans.

Requests for use of motorized equipment or helicopters in search and rescue activities in wilderness, must be approved by the Forest Supervisor.

SOIL, AIR, WATER, AND RIPARIAN AREAS

Soil Resource

Goal: Maintain or enhance soil and land productivity.

1. Plan and conduct land management activities so that reductions of soil productivity potentially caused by detrimental compaction, displacement, puddling, and severe burning are minimized. Nutrient capital on forest and rangelands is to be maintained at acceptable levels as determined by state of the art technology.

2. Plan and conduct land management activities so that soil loss from surface erosion and mass wasting, caused by these activities, will not result in an unacceptable reduction in soil productivity and water quality (as stated in FSM 2500 R-6 Supp. 45 or as revised).

3. No more than 20% of an activity area may be severely burned, compacted, puddled, or displaced as a result of the activity. Only permanent features of the transportation system will remain in a detrimentally compacted, puddled, and/or displaced condition.

4. Surface erosion will be minimized by maintaining effective ground cover after cessation of any soil disturbing activity:

Erosion Hazard Class	Minimum Percent Effective Ground Cover 1st Year	2nd Year
Low	20 - 30	30 - 40
Medium	30 - 45	40 - 60
Severe	45 - 60	60 - 75
Very severe	60 - 75	75 - 90

5. Plan and accomplish rehabilitation projects as necessary to meet soil and water objectives and standards.

6. Areas classified as irreversible soils (S-8) will generally be considered as unavailable for road construction and timber harvest.

7. An area approximately 1/8 mile wide surrounding a confirmed S-8 classification should be evaluated during project planning to determine if special management considerations may be required due to unstable soils and/or possible adverse effects caused to adjacent S-8 soils. These special considerations might include practices such as: avoidance by roads, reduced unit size, scheduling to reduce frequency of harvest, and use of suspension. Refer to Forest Supervisor's 2550 memos of June 10, 1988, and January 2, 1990.

8. Other soils that are known to be unstable, but which are not sufficiently unstable to be classified as S-8, will require special transportation planning, design, layout, preconstruction, construction, and maintenance techniques. Refer to Forest Supervisor's 2550 memos of June 10, 1988, and January 2, 1990.

9. Utilize soil surveys and/or soil scientists in project planning work that involves activities that affect or are affected by the soil resource.

Air Resource

Goal: Protect Air Quality Related Values of the forest to the extent necessary to achieve Plan goals and to execute management activities within the constraints of existing air quality laws and regulations.

1. New Source Review procedures of the Prevention of Significant Deterioration provisions of the Clean Air Act requires the Forest Service, as a Federal Land Manager, review the impacts of all proposals to construct or modify pollutant emitting facilities that may impact federal lands. Federal Land Manager acknowledgement of acceptable impacts is required before permit issuance by the Department of Ecology. The forest will maintain a line of communication with the Department of Ecology and other regulatory agencies to insure that permit reviews are accomplished.

2. All wildfires or prescribed fires that exceed applicable air quality regulatory standards will receive appropriate suppression action to minimize the impact to air quality.

3. The Forest Service will comply with all applicable air quality laws and regulations, and coordinate with appropriate air quality regulatory agencies.

4. The Forest must demonstrate reasonable progress in reducing Total Suspended Particulates (TSP) from prescribed burning activities. The State of Washington has defined "reasonable further progress" as a 35% reduction in the emission of TSP from prescribed burning by 1990 in western Washington.

5. The Forest air resource shall be protected against pollution sources outside Forest boundaries through application of the Prevention of Significant Deteriorations (PSD) regulations contained in the Clean Air Act. Special protection shall be afforded Air Quality Related Values (AQRV's) found in Class I wilderness. Information on both PSD's and AQRV's is available in the Air Resource Management Handbook.

Water Resources and Riparian Areas

Goal: Maintain or enhance water quality and riparian areas.

1. Limit acres of final harvest to meet the water quality and riparian management requirement. The management requirement, expressed as the maximum number of final harvest acres per FORPLAN Allocation Zone (watershed) per decade, is shown in Table 4-18.

2. Meet or exceed Water Quality Regulations for waters of the State (Washington Administrative Code, Chapter 173-201) through application of Best Management Practices (see Glossary). The key beneficial uses which BMP's are designed to protect are fish and water for domestic use.

3. Use the existing process to implement the State Water Quality Management Plan on lands administered by the USFS as described in a Memorandum of Understanding (MOU) between the Washington State Department of Ecology and U.S. Department of Agriculture, Forest Service (7/79), and "Attachment A" referred to in this MOU (Implementation Plan for Water Quality Planning on National Forest Lands in the Pacific Northwest 12/78).

4. Geographical boundaries of riparian areas will be determined by on-site characteristics. They are lands adjacent to perennial and intermittent streams, lakes, wetlands, ponds, springs (seeps), floodplains, or other wet areas.

5. Maintain the bank, flood plain, and shore stability of all wetlands, streams, lakes, and other bodies of water. (This standard applies above the high waterline on reservoirs.) Implicit in this standard are actions to prevent all forms of accelerated soil erosion and soil compaction, and the retention of the live root mat to the maximum practicable extent.

6. Riparian areas should be maintained in accordance with FSM 2526 MBS Supp. 01/81 or as revised.

7. Large woody material (plus trees) needed to meet the desired future condition shall be maintained and managed to: (1) maintain water quality in streamside management units of all streams at existing levels, and (2) maintain fish habitat at existing levels.

8. Maintain in-channel and streambank stability maintained for upper and lower channels in the Forest watersheds in order to provide stable, high-quality habitat for salmon and trout, and provide high quality water for other in-stream beneficial uses.

9. Maintain pool conditions in both upper and lower channels in the Forest watersheds to: (1) provide high quality habitat for salmon and trout, and (2) provide in-stream flow regulation.

10. Along perennial streams and fish bearing intermittent streams, vegetation should be maintained to provide cover and/or root strength so as to maintain streambank stability and fish habitat capability at existing levels.

11. Highly incised Class III streams shall be evaluated during the project planning process to determine if special measures may be required to protect significant riparian and/or associated riparian values.

    a. The evaluation should include an analysis of such factors as: soil stability, stream size and gradient, steepness and height of the inner gorge, and vegetative types. Depending upon these factors, special measures may be required which would include one or more of the following; stream clean out, intermediate tree marking, topping, directional falling away from the stream, yarding away from both sides, and full suspension across the stream. In all cases existing non-merchantable riparian vegetation should be maintained to the extent practicable.

b. In some cases, the lightly incised Class III streams have existing fish usage (anadromous and/or resident) that make potential fish habitat enhancement investments worthwhile. In the original stream classification done on the Forest, this potential was not known or recognized. For these Class III streams, fish habitat enhancement intensities from Management Prescription 13 may be applied.

c. As new information or additional data become known on a Forest stream (e.g. stream surveys, habitat improvement project data, other agency data), stream classification status may or may not require reclassification.

12. For class I, II, and fish bearing class III streams, the maximum daily temperature shall not exceed 65^{0} F. and the average 7 day maximum temperature shall not exceed 60^{0} F.. Exceptions must be based on scientific rationale, and must maintain the existing level of beneficial uses of the water, and be approved through NEPA analysis and documentation.

13. The Forest shall inventory and map riparian areas during project design and enter information and data into Forest-wide data base.

14. Consult with a hydrologist if the activity being planned involves riparian areas, wet lands, flood plains, or probable cumulative impacts on water resources.

15. Instream flow on National Forest System Lands should be protected through critical analysis (via NEPA) of proposed water uses, diversions, and transmission applications and renewal of permits. Protection of instream flow needs may be achieved through filing protests with States where applications are made that adversely affect National Forest resources, asserting claims for this water under Federal or State laws where applicable, inserting protection measures into special use permits, or reaching formal agreements over use. Purchase of water rights and impoundments are other means for reducing these impacts.

Table 4-18
Maximum Number of Acres that can be Final Harvested
by Allocation Zone (Watershed) by Decade

ALLOCATION ZONE No.	Name	DECADE 1	DECADE 2
Mt. Baker Ranger District			
2	ILLABOT CK	425	425
3	CHILLMUNRD	250	250
4	CANYON CK	100	200
5	LRNOFKNOOK	400	400
6	GLAMFNOOKN	280	280
8	MDFKNOOKUR	250	250
9	URNOFKNOOK	980	980
10	MDFKNOOKSO	200	200
11	SOFORKNOOK	325	325
14	SWIFT-PARK	250	250
15	BAKER	650	1025
16	BKLKUNRD	350	350
17	LKSHANNON	300	300
18	LKSHANUNRD	200	300
20	JACKCRMUR	200	325
22	MRSKRVMR	625	625
23	URSKAGITRV	330	330
26	CASCADE RV	1100	1100
27	LRSKAGITRV	75	75
28	LRSKRVMUR	550	550
29	DEER CK NW	100	200
30	FINNEY CR	100	100
31	DEER CR SE	0	0
32	DEERCRUNRD	110	110
38	SAUK RV NE	100	100
North Bend Ranger District			
70	TLTRVMUMUR	250	250
71	NFKSNQALMU	700	700
72	TAYLORALMR	250	250
73	MFKSNQALMU	350	350
74	URMFKSNQMU	800	800
75	PRATT-ALMU	650	650
77	SFKSNOQMU	200	200
81	URGREENRV	500	500
82	GREENRVNO	300	300
83	GREENRVSO	1000	1500
Darrington Ranger District			
34	MRNOFKSTNO	200	200
35	MRNOFKSTSO	500	500
37	URNOFKSTIL	1000	1000
39	SAUK RV SE	1700	2500
40	SUIATTLERV	2500	1700
41	SU-RVMUNRD	750	350
42	WHITECHUCK	650	650
44	CANYON CR	250	250
45	SAUDRVUNRD	450	450
46	LRSOFKSTLL	350	350
48	URSOFKSTLL	500	500
49	SAUKRVFORK	250	250
Skykomish Ranger District			
47	SULRVUNRDN	200	200
51	SULRVURSE	300	300
52	SULTAN RV	100	100
53	NFSKYURSO	650	650
54	NFKSKYURNO	500	500
55	NOFKSKYRV	1060	1060
56	NFKSKYURW	310	310
57	SKYRVMUNRD	350	350
59	TYE RIVER	100	150
60	BECK-RAPID	3600	4000
61	SOFKSKYUR	240	240
62	SOFKSKYRV	270	270
63	SKY-TOLT	300	200
65	SFKSKYALMR	430	430
67	TY-BEC-MU	700	1000
68	FOSSRVALMU	500	500
69	MILLERALMU	200	200
White River Ranger District			
84	GREENWATER	650	880
85	LRWHITERV	250	250
86	CLEARWATER	407	407
90	HUCKLBRYCK	1300	1300
91	WFWHITERV	2000	2000
93	CARB-PUYAL	1150	1150

DIVERSITY AND LONG-TERM PRODUCTIVITY

Goal: Maintain native and desirable non-native plant and animal species and communities. Provide for all seral stages of terrestrial and aquatic plant associations in a distribution and abundance to maintain the productivity of these biological communities.

General

1. Maintain or enhance plant and animal diversity by providing or developing an ecologically sound distribution and abundance of plant and animal communities and species at the forest stand, sub-drainage, and Forest level. This distribution must contribute to the goal of maintaining or enhancing all native and desirable introduced species and communities. Management Standards and Guidelines for all resources serve as a foundation for this distribution.

2. In addition, evaluate opportunities to maintain or enhance stand, sub-drainage, and Forest level components of biological diversity on an area-by-area basis as commensurate with management area direction. Specific opportunities include the following:

    a. Retain contiguous forest stands of later seral stages within drainages. Link patches of later seral stages with corridors of mid to late seral stages, such as riparian or visual corridors.

    b. Identify sub-drainage specific management objectives for fish and wildlife habitat and plants. These sub-drainage objectives should maintain or develop the habitat sizes, patterns, and spacing essential for allowing genetic interchange and movement of species.

    c. Where mature and old-growth forest stands are managed for wildlife habitat, select and manage for stand size, characteristics and spatial locations that will help support all plant and animal species closely associated with those habitats.

3. During project planning, develop site-specific management prescriptions that meet objectives for biological diversity and ecosystem function. In addition to other management direction, consider the following guidelines for maintenance of species diversity through commercial forest management:

    a. Conserve or enhance long-term site productivity, including wildlife habitat productivity, by maintaining, throughout the rotation, levels of large woody, as well as small fine materials, on the ground which are similar to those typically encountered in natural ecosystems of the appropriate type.

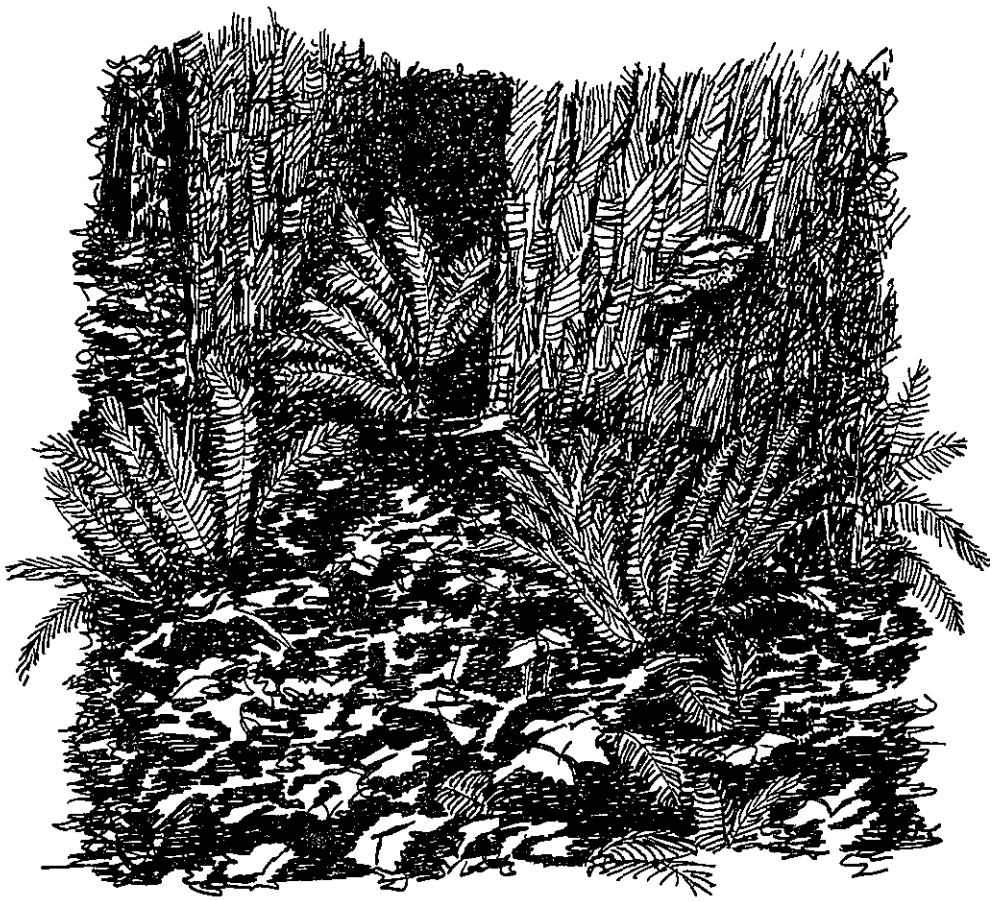
    b. Retain standing dead and standing green trees sufficient to maintain cavity nester habitat at or above 40% of minimum potential population levels, throughout the managed forest (80% in riparian areas). Retention trees and snags should be of the largest size class available in the stand, and should be selected considering safety regulations. Minimum numbers of desired species of retention trees should be determined by modeling the stand through its rotation, and

should be designed to meet current and future habitat needs. Where possible, leave wildlife trees at levels which will be similar to those typically found in natural ecosystems of the appropriate type.

c. Tree species used in planting harvest units should be based on the potential of the site as indicated by plant associations. Consideration should be given to regenerating and maintaining a mixture of species, where appropriate for the site.

d. Guidelines for commercial and noncommercial thinning should retain a diversity of species based on site potential.

e. Vegetation management should allow for all natural species to function. None should be eliminated from the site.



WILDLIFE HABITAT MANAGEMENT

Goal: Maintain a viable population of all native and desired non-native vertebrate species and maintain, protect, and improve habitat of management indicator species. The indicator species for this Forest are the American peregrine falcon, bald eagle, grizzly bear, northern spotted owl, pileated woodpecker, pine marten, mountain goat, and primary cavity excavators.

Management

1. As a minimum, provide sufficient numbers and sizes of live and dead trees throughout the Forest to maintain primary cavity excavators at the 40% population level using guides from Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington (Brown, 1985).

2. In addition to snags, large dead and down logs will be left. The number of logs and size specifications will be determined on a case-by-case basis using guides from Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington (Brown, 1985).

3. Nest sites actively being used by raptors or other bird species of special concern (ie; great blue heron) will be protected from human disturbance until nesting and fledging is completed. Protection of nest sites or areas will be sufficient for species involved. In project design, roost areas will be evaluated for the need for additional protection. Determination of protection area and seasons should involve consultation with a Wildlife Biologist.

4. Cliffs, talus, and caves are recognized as relatively unique habitats of the Forest and all potentially disturbing or altering management activities shall be carefully evaluated on the ground during the planning process to insure their protection and/or proper management.

5. Programmed activities in calving, fawning, and kidding areas should be discouraged. They shall be timed to minimize disturbance to the animals. This may require restricting access and operations during certain times of the year.

6. Provide a sufficient amount of available forage and optimal thermal cover to maintain viable populations of mountain goat.

7. Maintain a mix and distribution of successional stages that will support maintaining or enhancing diversity.

8. Provide highest levels of deer and elk habitat capability possible while still meeting other primary resource objectives.

9. Introduction of fish and wildlife species shall be carefully coordinated with the various State and Federal wildlife agencies and considered on a case-by-case basis through NEPA analysis.

10. During project design, surveys shall be made to determine the presence of or absence of mountain goat winter range. When identified, the area shall be maintained until an analysis can be completed and the need for a Plan amendment determined. Once the amendment is completed, the standards and guidelines for MA 15 shall apply.

11. Activities that adversely affect mountain goats on their spring and summer range shall be identified and mitigated.

12. Pileated woodpecker foraging areas shall be maintained by providing a sustained minimum average of two hard snags per acre $\geq$ 10 inches d.b.h. on an additional 300 acres around each pileated woodpecker habitat management area.

13. Seed areas in identified winter range with big game preferred seed.

14. Maintain areas which serve as connecting habitat or travel corridors for indicator species. Future timber management of connecting habitat is not precluded as long as there are blocks of similar quality and age stands serving as connecting habitat in the adjacent area. These areas will be provided at intervals of 1/2 to 3 miles along a drainage, depending on the land forms, forest structure, and wildlife use of the area. Connecting habitat is defined as areas which serve as travel corridors or habitat connections, provide for the dispersal and interaction of indicator species, and avoid the isolation of habitat into geographic islands. These areas provide species access across drainages and elevation gradients (ridgeline to valley floor.)

    Connecting habitat can be provided by:

    a. Utilizing natural land forms when possible, such as riparian areas along creek drainages, or the areas adjacent to avalanche chutes.

    b. Maintaining areas in blocks of land that are generally one or more logical harvest units in size. This will provide the option of rotating the designation of connecting habitat to adjacent areas, as the adjacent harvested areas mature and develop the desired habitat structure.

15. For spotted owl pairs occupying non-network sites, protect the nest tree and an area around it. Disturbance will be minimized or eliminated adjacent to the nest during the nesting period. Seek technical assistance of the U.S. Fish and Wildlife Service and Washington Department of Wildlife in developing management strategies for these sites.

16. Areas proposed for timber harvest which contain habitat suitable for spotted owls will be surveyed according to standard inventory procedure. Maintain survey results in the Ranger District office and forward to the Forest Coordinator periodically.

FISH HABITAT MANAGEMENT

Goal: Provide a diversity of terrestrial and aquatic communities while maintaining water quality. This goal applies to all areas dominated by riparian vegetation, including areas containing anadromous and resident fish habitat, perennial and intermittent stream courses, lakes, wet lands, and flood plains.

Note: the Forest-wide Standards and Guidelines for Water and Riparian Areas also apply.

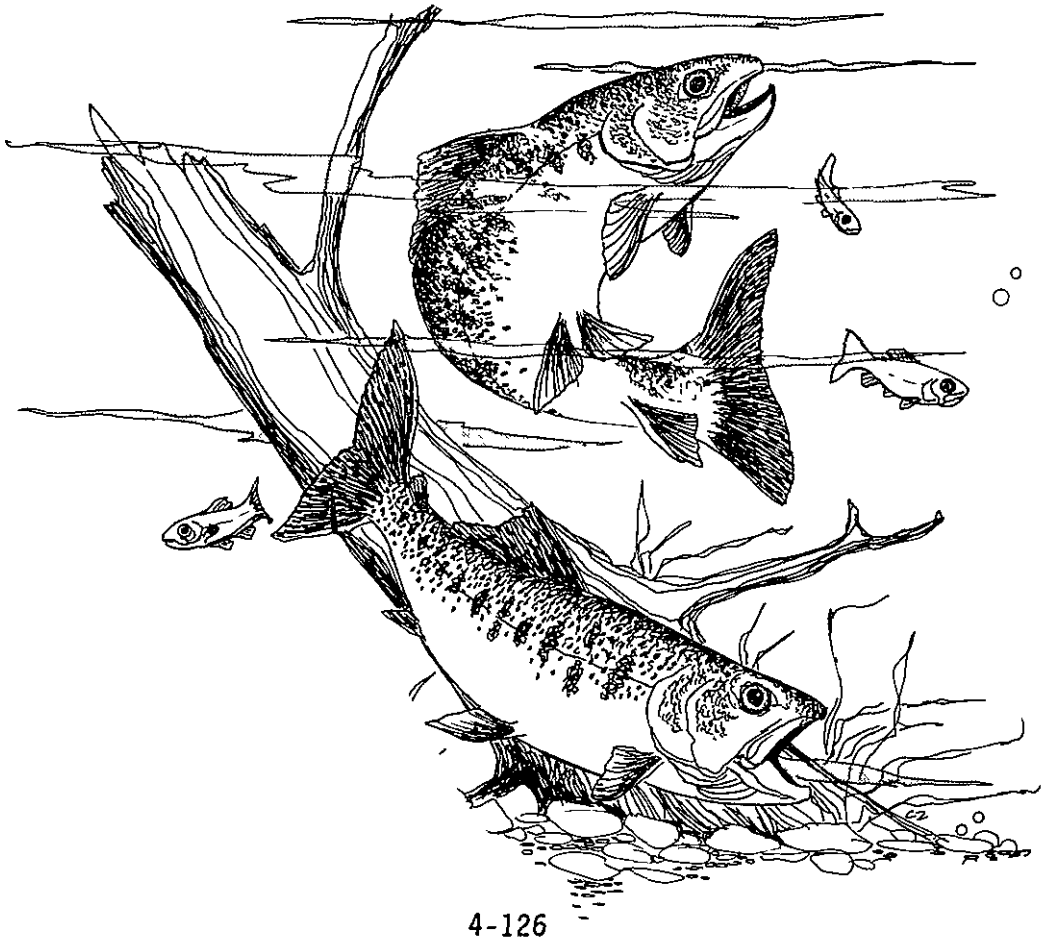
Management

1. Water quality shall be maintained or enhanced through application of Best Management Practices. This meets the requirements of the Clean Water Act and State Water Quality Standards (includes temperature, turbidity, and sediment).

2. Develop fish habitat restoration projects to rehabilitate lost or deteriorated habitat.

3. Cooperate with Washington Department of Fisheries and Department of Wildlife in providing a fish stocking program on the Forest (anadromous and resident fish).

4. All forest management activities should provide for unobstructed fish passage to historically accessible fish habitat.



THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Goal: Maintain or improve habitat for all threatened or endangered (T&E) plant and animal species on the Forest, and manage habitats for all sensitive (S) species to prevent their becoming threatened or endangered. Management of threatened, endangered, and sensitive species habitats is addressed below and under Management Area 16, Threatened and Endangered Species. These Forest-wide standards and guidelines describe typical management practices in T&E habitats. The Forest will consult with the USDI Fish and Wildlife Service in determining protection, enhancement, and mitigation measures for specific T&E habitat areas.

Overall Management

1. All proposed management actions which have the potential to affect habitat of endangered, threatened, or sensitive species will be evaluated to determine if any of these species are present.

   Biological evaluations will be completed for all proposed management activities which could affect T & E species. Management actions that may affect T&E habitat in any Management Area shall be guided by a Recovery Plan if one exists, and may only proceed after consultation with the USDI Fish and Wildlife Service as outlined in Section 7 of the Endangered Species Act (ESA). Biological evaluations, when necessary, shall be prepared as described in Forest Service Manual 2670.

   When sensitive species are present, a Biological Evaluation shall be completed as described in Forest Service Manual 2670. Habitat for sensitive plants and animals shall be managed to ensure that management activities do not contribute to these species becoming threatened or endangered.

2. The Forest will initiate, support and cooperate with State and Federal fish and wildlife agencies in developing recovery plans for Federally listed threatened or endangered species. Where such plans conflict with other Management Area direction, the recovery plans will take precedence.

3. The Forest and Districts will cooperate in conducting inventories and keeping records of essential and/or critical habitat and its distribution for all T&E and sensitive species. Occupied habitats of threatened, endangered, and sensitive species will be monitored on a regular basis.

4. Collection of Federally listed threatened and endangered and R-6 listed sensitive plant species should only be allowed under permit. The issuance of permits must be preceded by the same degree of assessment required for other projects.

5. Before project decisions are made, consult with Federal, State, other agencies, groups, and individuals concerned with the management of T&E and sensitive species. In the design of projects for implementation where such species, areas, or habitats are known to occur, insure that appropriate action is taken to protect these species, areas, and habitats.

USDI Fish and Wildlife Service will be consulted for technical information and ESA Section 7 consultation when a management activity may affect a threatened or endangered species.

The Washington Department of Wildlife will be consulted for technical information in development of species management guides, and in determinations of viable population levels of sensitive species. The Washington Natural Heritage Program will be consulted for technical information regarding sensitive plant species or unique plant communities.

6. The Forest shall develop site specific management plans for threatened and endangered species in accordance with recovery plans.

   Species management guides shall be developed for each sensitive species. These plans should be developed on a regular basis and in order of highest priority so that all guides are completed by the end of the tenth year after approval of the Forest Plan. Following the development of a management guide for a sensitive species, projects will follow the objectives of the management guide.

7. Known bald eagle nests and roost sites are managed under standards and guidelines in Management Area 16A, Bald Eagle. Additional bald eagle nests or roost sites identified in the future will also be managed under that prescription.

   If habitats for peregrine falcons, resident gray wolves or grizzly bear are identified in the future, the standards and guidelines for these species in Management Area 16, Threatened and Endangered Species, will supersede the existing management prescription for these habitat areas.

8. The following standards and guidelines apply to bald eagle feeding areas. They indicate the typical management practices for these areas and typical sizes for the management areas. However, protection and mitigation needs will vary depending on the individual habitat site and will be determined in each case in consultation with the USDI Fish and Wildlife Service.

   a. The Forest will determine whether human activities are adversely affecting bald eagle use of feeding areas. Where these adverse effects are occurring, protection or mitigation measures will be identified and implemented. These may include restrictions or controls on human uses of these habitat areas at certain times.

   b. Existing developed sites will not be expanded and increased human use will be discouraged when monitoring identifies a potential conflict with bald eagle use of feeding areas.

   c. Roads shall not be planned within 1/4 mile of known feeding areas. Reconstruction activities will be prohibited when feeding areas are in use.

   d. Construction of development projects near feeding areas should not be conducted during the time of bald eagle use.

e. Development of new commercial or private homesites is prohibited within 1/4 mile of shorelines used as part of feeding areas.

f. Require air space restrictions for low level aircraft in the vicinity of feeding areas during the season of habitat use.

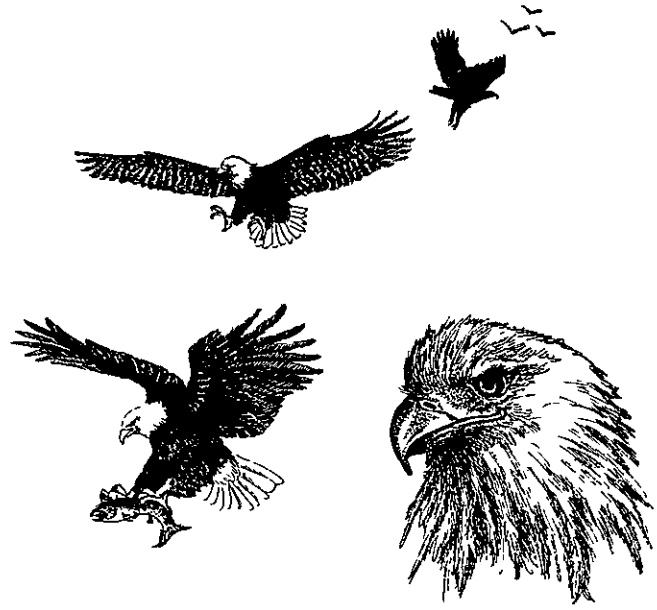
g. Timber management activities should be restricted within 1/4 mile of feeding areas during their season of use. There should be no treatment of fuels in feeding areas when in use.

h. Mineral activity shall be prohibited within 1/4 mile of shorelines used for bald eagle feeding.

i. In known feeding areas, perch trees within 200 feet of shorelines should be preserved.

9. Threatened, Endangered and Sensitive species of plants and animals are identified as important Air Quality Related Values. All permit applications to the Department of Ecology under the requirements of the Prevention of Significant Deterioration provisions of the Clean Air Act for modification or construction of pollution emitting facilities will be evaluated by the Forest for their potential impacts on AQRV's. Mitigating and monitoring requirements necessary for protection will be recommended for inclusion in any permits issued by the Department of Ecology.

10. All habitat improvement projects for Threatened, Endangered, or Sensitive species will be small-scale and experimental in nature until such time as species responses are better understood. When species response to a specific improvement project can be predicted, projects can be larger in scale and practical in nature.



TIMBER MANAGEMENT

Goal: Provide for the production of timber on lands classified as suitable for timber production consistent with various resource objectives, environmental constraints, and considering cost efficiency.

Suitable Forest Lands - Allowable sale quantity shall be programmed and harvested only on those lands classified as suitable for timber production.

Non-Declining Flow - The harvest schedule for any decade will be equal to or greater than the planned sale and harvest for the preceding decade of the planning period provided that the planned harvest is not greater than the long-term sustained-yield capacity consistent with the management objectives of the alternative (36 CFR 219.16(a)(2)(iv)).

Management Practices, Intensities, and Utilization Standards - The management intensities and utilization standards used in determining harvest levels are as follows:

1. Management Practices. Management intensities will vary with site productivity, timber species, other resource management objectives, and timing of implementation. Each of the following timber management practices may be used singly or in combination to determine the appropriate management intensity.

   a. Site preparation - chemical, mechanical, and prescribed fire.
   b. Genetic Tree Improvement.
   c. Reforestation by planting, seeding, or natural.
   d. Growing stock protection from animals, insects, and diseases.
   e. Release and weeding - chemical, mechanical, and prescribed fire.
   f. Precommercial thinning.
   g. Commercial thinning.
   h. Salvage harvest.
   i. Final harvest.
   j. Fertilization

2. Utilization Standards. Separate utilization standards are to be used in determining harvest levels for the first decade and future decades to the planning horizon. The standards displayed in the table below shall apply on the Forest, except where individual market areas or specific products present opportunities for standards specifying utilization of a higher proportion of the tree resource.

Table 4-19
Timber Utilization Standards

	Minimum DBH (Inches)	Minimum Top DIB (Inches)
Existing Timber Stands		
Final Harvest Size	9	6
Commercial Thinning Size	7	4
Regenerated Future Timber Stands	7	4

Culmination of Mean Annual Increment - Minimum rotation lengths will be based upon the length of time required to achieve volume production equivalent to at least 95 percent of culmination of mean annual increment. Exceptions are permitted for the use of sound silvicultural practices, for salvage or sanitation harvesting, or for the removal of a particular species of trees after considering the multiple objectives of the area.

Regeneration Assurance - When trees are cut to achieve timber production objectives, the cutting will be made so as to assure that lands can be adequately restocked within 5 years after final harvest [36 CFR 219.27(c)(3)]. Research and experience indicate that the harvest and regeneration practices planned can be expected to result in adequate restocking.

Adequate restocking for the Mt. Baker-Snoqualmie will meet the minimum stocking level for regeneration, as defined by a site-specific silvicultural prescription. Minimum stocking levels will generally be no lower than 190, well distributed established trees per acre. Five years after final harvest is defined as: 5 years after clearcutting, 5 years after final overstory removal in shelterwood cutting, 5 years after the seed tree removal harvest in seed tree cutting, or 5 years after selection cutting.

Created Openings

1. Forest openings created by the application of even-aged harvest cutting methods shall be limited to a maximum size of 60 acres in the Douglas-fir type of the coastal Douglas-fir zone, and to a maximum size of 40 acres for all other forest types in the Pacific Northwest Region. Exceptions are permitted for natural catastrophic events (such as fires, windstorms, or insect and disease attacks) or on an individual basis after a 60-day public notice period and review by the Regional Forester. In addition, the limits may be exceeded by as much as 50 percent without necessitating review by the Regional Forester, or 60 days public notice, when exceeding the limit will produce a more desirable combination of net public benefits.

   Created openings will be prescribed by the Silviculturist based on site objectives, site indicators and other site factors.

   These size restrictions may be increased 50 percent if any one of the following four criteria are met:

a. When a larger created opening will enable the use of an economically feasible logging system that will lessen the disturbance to soil, water, fish riparian resources, or residual vegetation. Such lessening is to be achieved by reducing landing or road construction, by enabling such construction away from unstable soil, or by reducing soil and vegetation disturbance caused by dragging logs.

b. When created openings cannot be centered around groups of trees infected with dwarf mistletoe or root rot and therefore need to be expanded to include these trees in order to avoid infection of susceptible adjacent conifers.

c. When visual quality objectives require openings to be shaped and blended to fit the landform.

d. Where larger openings are needed to achieve regeneration objectives in harvest areas being cut by the shelterwood method, and where destruction of the newly created stand would occur as a result of delayed removal of shelter trees. This exception applies only to existing shelterwood units and to shelterwood units under contract prior to approval of the Forest Plan.

2. A harvested area of commercial forest land will no longer be considered a created opening for silvicultural purposes when stocking surveys, carried out in accordance with Regional instructions, indicate prescribed tree stocking that is at least 4-1/2 feet high and free to grow (USDA, 1984b). When other resource management considerations (such as wildlife habitat, watershed needs, or visual requirements) prevail, a created opening will no longer be considered an opening when the vegetation in it meets a particular management objective stated in the Forest Plan.

3. Created openings will be separated by blocks of land that generally are not classed as created openings and that contain one or more logical harvest units. These areas shall be large enough and contain a stand structure appropriate to meet resource requirements of the Forest Plan. Resource requirements may include wildlife habitat, watershed, landscape management, and others. Contiguous harvest units (cornering or otherwise touching) are not precluded, but must be considered as a single opening which must be created within requirements for size, exception procedures, and justification.

   The total area of created openings contiguous to 30-acre or larger natural openings should normally not exceed one-third the size of the natural opening and not occupy more than one-third of the natural opening perimeter. Openings should not be created adjacent to any natural openings (regardless of size) unless adequate vegetation along the edge can be developed or retained in sufficient density to protect wildlife and visual management objectives. The determination of adequate vegetation will be made by an appropriate interdisciplinary team.

Silvicultural System - Even-aged silvicultural management has been determined, by experience and research, to be the optimum system for timber production on the Mt. Baker-Snoqualmie National Forest. (Refer to Appendix F in the FEIS.) Uneven-aged silvicultural system may be used, if necessary, to meet established requirements of other resources. Selection of a silvicultural system will be made with a site-specific analysis. Selection of the appropriate silvicultural systems will be guided by the following criteria and the land management allocation.

1. The selected silvicultural system must permit the production of sufficient volume of marketable trees to permit utilization of all trees which meet utilization standards and are designated for harvest.

2. The selected silvicultural system must permit the use of an available and acceptable logging method that has the capability to remove logs and other products without excessive damage to the identified desirable residual vegetation.

3. The selected silvicultural system must be capable of providing special conditions, such as a continuous canopy or continuous high density live root mats when required by critical soil conditions or needed to achieve management objectives such as streamside protection, wildlife needs, and visual resources.

4. The selected silvicultural system must permit control of existing or potential vegetation to a degree that establishment of number of trees, other desirable vegetation, and rates of growth as identified in site specific silviculture prescriptions for harvest areas can be achieved.

5. The silvicultural system selected must promote stand structure and species composition which avoids serious risk of damage from mammals, insects, disease, or wildfire and will allow treatment of existing insect, disease, or fuel conditions. Monoculture is to be avoided.

6. The silvicultural system selected must meet resource allocation and vegetation management objectives identified in the Forest Plan. Silvicultural systems for specific areas may be identified during the NEPA process.

7. Salvage harvest practices may be employed on suitable lands unless stated otherwise in a strategy.

Vegetative Manipulation Activities - All vegetative manipulation activities related to timber management will be prescribed for or approved by a certified silviculturist.

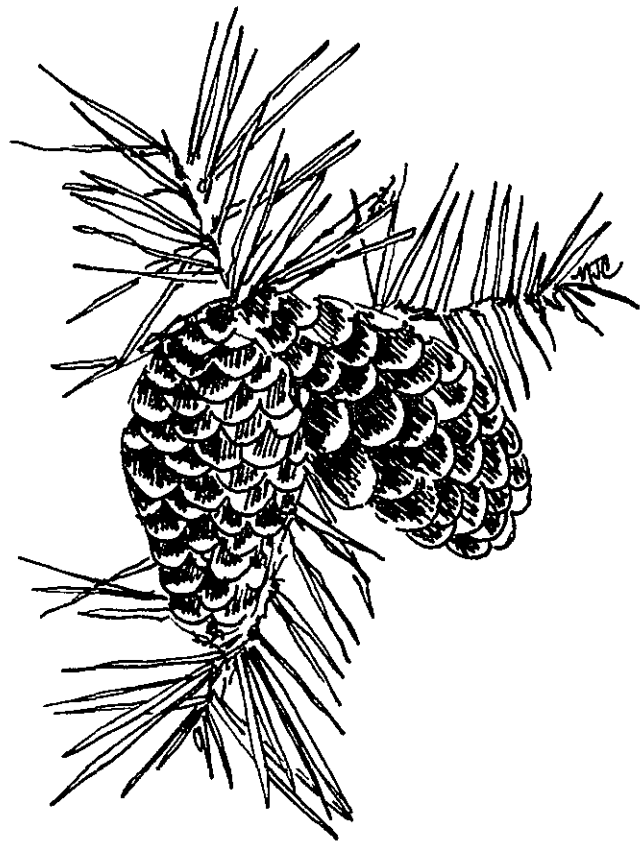
Timber Volume Chargeable to Allowable Sale Quantity (ASQ) - The timber sale preparation final package must state the volume of timber in MMCF that is chargeable to the ASQ. All volume included in the growth and yield projections to calculate the ASQ is net live timber volume meeting Forest Utilization Standards, and is chargeable to the ASQ. All other timber not meeting these Standards, including most dead and down, shall be nonchargeable.

Timber
Forest-wide S&G

Catastrophically killed stands of timber which were included in ASQ calculations would normally be sold as chargeable.

Western redcedar

Favor the regeneration and management of Western redcedar on those sites where it now occurs and on sites where environmental conditions are such that successful establishment and management would occur.

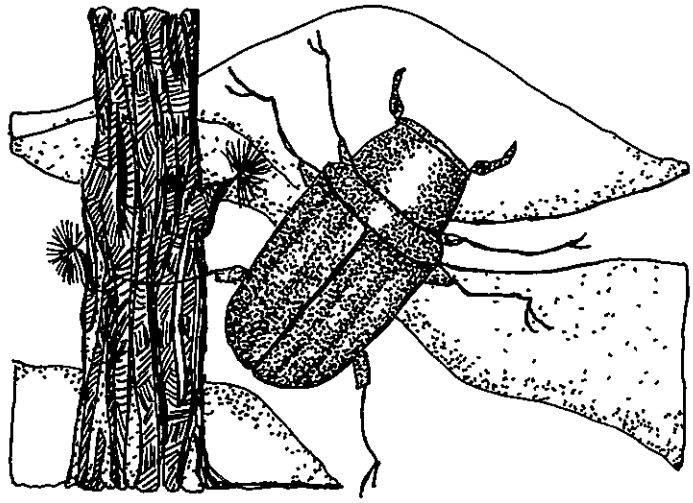


VEGETATION MANAGEMENT

Goal: Vegetation management and/or manipulation to meet objectives of the management areas.

1. Vegetation management and/or manipulation will follow the Record of Decision, Managing Competing and Unwanted Vegetation, Final EIS, Pacific Northwest Region, December 1988 (or as amended), the Mediated Agreement, and implementation direction.

2. Control noxious weeds to the extent practical. The following methods for control shall be used: mechanical, biological, access restrictions to prevent spread, seeding disturbed soils and use of herbicides. Small infestations of new noxious weeds (e.g. tansy ragwort should be eradicated as quickly as possible.



Minerals
Forest-wide S&G
MINERALS AND ENERGY

Goal: Provide for exploration, development, and production of mineral and energy resources while minimizing effects on the surface resources.

Management

1. An appropriate environmental analysis and documentation will be used as a basis for making recommendations in leasing or licensing and in determining necessary stipulations for the protection of other resources.

2. Processing and administration of all mineral, oil and gas and geothermal leases, exploration proposals, and development proposals will be in accordance with State and Federal rules, regulations, and standards.

3. Mineral exploration and mineral removal are permitted throughout the Forest, except withdrawn areas.

4. All activities which involve significant disturbance of the surface resources require a notice of intent and/or an operating plan be submitted and processed in accordance with 36 CFR 228.

5. Reclamation standards will be developed to insure land restoration to a productive condition to the extent practicable. Opportunities to enhance other resources will be considered. Concurrent reclamation will be required and bonded.

6. Withdrawal of lands from appropriation or entry under the mining or mineral leasing laws will be in accordance with Section 204 of the Federal Land Policy and Management Act of 1976 (FLPMA). Areas with mineral potential will be recommended for withdrawal from mineral entry when mitigation measures would not adequately protect other resource values which are of greater public benefit. Review of existing withdrawals will be made by 1991 as required by FLPMA.

7. For mineral lease applications submitted by USDI Bureau of Land Management, appropriate stipulations will be required for leases as necessary to achieve Management Area prescriptions. "No surface occupancy" stipulations will be incorporated in lease recommendations when: (a) surface occupancy would cause significant resource disturbance which cannot be mitigated by other means; (b) where resource impacts would be irreversible or irretrievable; or (c) the activity proposed is incompatible with the surface management prescription.

8. Common variety materials (including gravel pit sources) will be managed by lease, sale, or permit in accordance with the following criteria:

    a. Priority will be given to utilization of existing sources over development of new sources.

    b. Use will not be authorized where removal will conflict or interfere with prior authorization or Management Area prescriptions.

    c. Requests for use of common variety minerals will be processed as stipulated in 36 CFR 228, Subpart C.

    d. A development plan and appropriate NEPA documentation will be prepared prior to development of new common variety mineral sources.

LAND USES

Goal: To be responsive in the consideration of the use and occupancy of the Forest by private individuals, Federal, State, and local governments when such use is consistent with Forest management objectives, is in the public interest, and cannot be reasonably served by development on private land.

General

1. Special use evaluation, permit issuance, fees and administration will be in accordance with Forest Service Manual 2700 or as revised, and 36 CFR 251.

2. In considering special use applications, the needs of the general public will be given priority over the applicant.

3. Land to be used will be suitable for the proposed use and kept as small as is consistent with the intended use. National Forest land will not be made available for private development when suitable private land is available to support needs.

4. Provisions will be made to protect land and resources of the National Forest. Forest Service will approve location of all developments, designs, and plans for construction of facilities.

5. Applicants should be required to furnish necessary environmental analysis, other required studies, plats, etc., and provide funds for administration of the permit.

6. New resort activities, plus recreation and concession proposals will be selected through a competitive process if interest is shown by several parties.

7. Applicants for sites and facilities will be directed toward use of sites in the following order:

   a. Utilizing capacity of existing approved sites.

   b. Utilizing new sites through and following an environmental analysis. Site plans should be prepared prior to installing facilities.

Right-of-Way Grants and Acquisition

1. Grant needed easements to State and local governments for existing and relocated roads and highways. Follow 36 CFR 212.8, 9, 10, and 11 in granting and acquiring access across lands and easements administered by the Forest Service.

2. Acquire road and trail rights-of-way across non-National Forest land to implement and support resource management activities. Coordinate with intermingled and adjacent landowners, plus State and local government in developing roads or road systems that serve the needs of all parties.

3. Where appropriate, the Forest will enter into and continue existing cost share agreements. The Forest Cost Share program will be managed according to principles established in FSM 5467 and the deeds.

4. Grant access to private property in accordance with Federal rules, regulations and standards.

Landlines - Survey and mark boundaries to accomplish the following priorities: (1) protect present corners or references when the possibility of disturbance exists, (2) resolve or prevent encroachment, (3) assist forest users in identifying public lands, and (4) to help assure full utilization of National Forest resources.

Utility and Transportation Corridors

1. Future memoranda of understandings, project maintenance and construction plan will meet Forest Standards and Guidelines and Management Area 25 management direction.

2. When applications for rights-of-way for utilities and highways are received, the Forests' first priority will be to utilize residual capacity (within or contiguous) in existing corridors. The corridors will be planned and located to minimize ground and air disturbance.

3. The Forest will consider only that area between Pyramid Peak and Tacoma Pass as a potential new major cross Cascade utility corridor. This corridor will only be considered after the existing corridors have been utilized to their maximum.

4. Potential utility and transportation rights-of-way will be examined in relation to issues and concerns and resource management objectives.

5. Routes through wilderness are excluded from consideration as utility or transportation corridors. Routes through Management Areas 1A, 1B, 1C, 3A, 3C, 3D, 4, 5A, 5B, 5C, 7, 11, 12, 13D, 15, and 18 shall be avoided during consideration of utility or transportation corridors.

Other Uses - Applications for licenses or grants associated with dams and reservoirs shall be recommended for approval when they are consistent with the Management Area goals and objectives.

LAND ADJUSTMENTS

Goal: To provide an optimum pattern of landownership within the Mt. Baker-Snoqualmie National Forest considering resource goals and efficiency of managing the Forest.

Landownership Classification

1. All National Forest land and land in other ownerships within the forest boundary will be classified into one of five landownership classification groups. This classification system identifies opportunities to acquire, retain, exchange, or relinquish lands to facilitate administration of the Forest.

   Group Definitions.

   a. Group I - This group includes those lands where Congress has either directly or indirectly instructed the Forest Service to retain ownership and acquire non-Federal lands for a designated purpose.

   b. Group II - Landownership direction for Group II lands is to retain National Forest ownership and acquire private land as the opportunity and/or need occurs.

   c. Group III - These lands will be available for land adjustment and usually will provide most of the land considered in exchange projects.

   d. Group IV - Lands in this group are normally made available to acquire private land in Groups I, II, or III areas.

   e. Group V - This group includes situations where it is determined that a more intensive study and planning are necessary before landownership decisions are made.

FACILITIES

Goal: Provide and manage roads, facilities, and utility systems required to protect and manage the Mt. Baker-Snoqualmie National Forest.

Roads

1. Planning.

   a. The Forest Transportation System will be planned to serve long-term multiple resource needs as provided in Management Area direction.

   b. Maintain the Forest Road Management Plan.

2. Construction. Roads will be designed, constructed, and/or reconstructed according to standards appropriate to planned uses, activities, safety, economics, and impacts on lands and resources using criteria in FSM 7700 and 7720 or as revised.

3. Operations and Maintenance.

   a. Operate, maintain, and/or close roads to meet established road management objectives and safety.

   b. Where appropriate, the Forest will enter into and continue existing cost share agreements.

   c. Close and return to the planned resource use all roads not on the Forest Development System or authorized by permit, lease, or easement. Measures will be taken to prevent excessive resource damage.

   d. Develop and implement projects to correct road related water quality, anadromous fish habitat, and other resource problems.

Facilities

1. Facilities will be managed to support Forest Management Objectives.

2. Barrier free access will be provided in facilities when mandated by Washington State Law or by Forest Service policy.

3. Facility alterations will be accomplished in conformance with the cultural management requirements of the site.

4. All new facilities on the Forest should employ the Cascadian architectural style. The Cascadian style is a variety of rustic architecture. It's character-defining elements are described in Appendix A of the Internal Management Guidelines for Depression-Era Buildings.

   a. Design shall borrow from, but not duplicate, the elements of Cascadian design.

   b. Design shall emphasize the use of wood and other Forest resources.

c. Use wood frame designs in administrative sites, except in the immediate vicinity of existing log buildings.

d. Use contemporary wood products in public interior spaces where they will be dominant and seen.

e. Vary interior and exterior textures. Shake roofs, alternation of direction and pattern of siding, rough-sawn wood textures and occasional stone treatments on prominent walls will create visual interest.

f. Use heavy posts of wood or stone for porticos and interior columns.

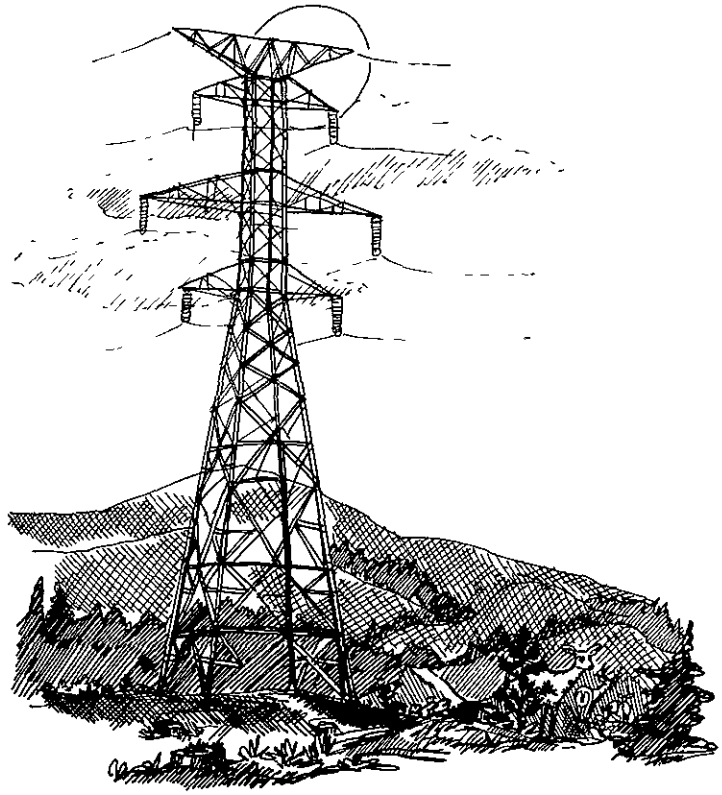
g. Windows can be aluminum, but should be darkly anodized. Consider using snap-in mullions.

h. Establish an integrated paint scheme for building groups. Use earth tones. All buildings on a site need not be the same color (for example, office, residential and service buildings might each have a distinct color treatment, within an integrated scheme).

i. Design steep roof pitches of gable and hipped gable structure.

j. Proportion and align floors, windows, eaves, roof heights, building setbacks and building axes to adjoining buildings.

k. Match the scale of adjoining buildings.



PROTECTION

Pest Management

Goal: Protect forest and range resources from unacceptable losses due to destructive forest pests.

1. Develop and practice the use of Integrated Pest Management (IPM) prevention and suppression strategies. Methods may include management practices (cultural or silvicultural), biological, mechanical, manual, prescribed fire and/or chemical treatments, and regulatory measures. Prevention and suppression methods will be based on environmental analysis.

Fire

Goal: Provide and execute a fire protection and fire use program that is cost efficient and responsive to land and resource management goals and objectives.

1. All wildfire will receive an appropriate suppression response utilizing a strategy of confine, contain, or control.

2. Wildfires that threaten life, property, public safety, improvements, or investments will receive aggressive suppression action using a control strategy.

3. Prescribed fire will be considered for use in meeting management objectives in areas where ecological studies show that fire has played a significant role in ecosystem development.

4. Prescribed fire will be utilized only when careful analysis indicates that it will be cost effective and practical. This analysis will include consideration of measures to mitigate impacts on air quality, such as increased removal of slash from the site, reduction of acres to be burned for hazard reduction, and ignition and burning techniques that reduce fuel consumption.

5. Maintenance of air quality will be a key factor in planning prescribed fire use. Consideration will be given to mitigation measures, such as burning during a longer season to spread emissions throughout the year, avoidance of burning near recreational units during times of peak use, and coordination with State smoke management plans.

Fire Management Direction

Fire Protection: GROUP A Area: 315,000 acres

Applicable Management Areas: 2A,2B,3A,3B,3C,3D,7,8,11,12,16A,23A,25A,25B

Recommended Fire Prevention Intensity: Moderate

Recommended Fire Suppression Strategy: Control

Fire Suppression Direction:

Appropriate suppression action will be taken on all wildfires within the area these allocations apply. A contain or control strategy will be utilized on human caused fires and other wildfires which threaten cultural resources, capital investments, or other areas where preservation of existing vegetation is desired.

Prescribed Fire Direction:

Prescribed fire may be used to accomplish specific resource management objectives if it is the most cost effective method to use. All projects will recognize air quality and smoke management constraints. Unplanned ignitions may be used if they occur when prescription parameters needed to accomplish the prescribed fire objectives for the area can be met.

Operational Constraints:

Economic efficiency, guided by the maximum fire size constraint, will control the intensity of fire suppression efforts. The full range of suppression tactics and tools are available, although those with the least impact on the ground are preferred. Control or contain actions will be taken on any fire which has the potential to exceed the maximum fire size constraint for these allocations. Mop-up actions will be consistent with and insure the success of the suppression actions taken.

Fuel Management Objectives:

Activity fuels will be treated to the level necessary to achieve the expected resource objectives of the area. Normally this will be to return the area to as near natural appearance as possible. Natural fuels will not be treated except where necessary to meet specific resource or activity objectives.

Fire Management Direction

Fire Protection: GROUP B Area: 730,000 acres

Applicable Management Areas: 4,10A,10B,10C,10D,10E

Recommended Fire Prevention Intensity: Low

Recommended Fire Suppression Strategy: Confine Natural Ignition. Contain or Control Human Caused Ignitions

Fire Suppression Direction:

All wildfires will receive appropriate suppression action. Contain or control strategies will be used when wildfires threaten identified cultural sites or improvements or has the potential to leave the wilderness area and result in unacceptable damages. A confine strategy will be used elsewhere.

Prescribed Fire Direction:

Natural ignitions occurring under conditions that satisfy specific prescription parameters for the area may be used to accomplish wilderness objectives that are achievable through prescribed fire. Accidental human caused fires will not be used to accomplish prescribed fire objectives and will be suppressed. Planned ignitions may be used where necessary to meet wilderness management objectives.

Operational Constraints:

Containment or control actions will be in accordance with wilderness suppression guidelines (FSM.) Indirect attack utilizing natural barriers and changes in vegetation and topography will be utilized whenever possible. All actions will minimize disturbance to vegetation and soil. Helicopters may be utilized if they are the most cost efficient method of accomplishing the job. Natural openings will be utilized as helispots whenever possible. Clearing will be held to a minimum. Power saws and other mechanized equipment will be used only after Forest Supervisor approval. Air tankers will be used only on wildfires which threaten non-wilderness values. Mop-up will be limited to that necessary to maintain the integrity of contain or control objectives when applied.

Fuel Management Objectives:

Treatment of activity fuels will be consistent with wilderness management objectives.
As with other activities, the method least impacting on the land and vegetation will be the preferred method if disposal is necessary.

Fire Management Direction

Fire Protection: GROUP C Area: 288,000 acres

Applicable Management Areas: 1A, 1B, 1C, 1D

Recommended Fire Prevention Intensity: Low

Recommended Fire Suppression Strategy: Confine, Contain, or Control

Fire Suppression Direction:

Appropriate suppression action will be taken on all wildfires within the area this allocation applies. The contain or control strategies will be utilized when wildfires threaten cultural resources, capital investments or other areas with more constrained fire management direction.

Prescribed Fire Direction:

Prescribed fire may be utilized to accomplish specific resource management objectives if it is the most cost efficient method. All projects will recognize air quality and smoke management constraints. Unplanned ignitions may be used if they occur when prescription perimeters needed to accomplish the prescribed fire objectives for the area can be met.

Operational Constraints:

Economic efficiency rather than a specified acreage constraint will control the intensity of fire suppression efforts. The full range of suppression tactics and tools are available, though those with the least impact on the ground are preferred. Contain or control actions will be taken on any fire which has the potential to exceed the annual maximum allowable burned acreage for this allocation. Mop-up actions will be consistent with insuring success of contain or control actions where deployed.

Fuel Management Objectives:

Activity fuels will be treated to the level necessary to achieve the expected resource objectives of the area. Normally this will be to return the area to as near natural appearance as possible. Natural fuels will not be treated except where necessary to meet a specific resource or activity objective.

Fire Management Direction

Fire Protection: GROUP D Area: 68,000 acres

Applicable Management Areas: 5A,5B,5C,6,13

Recommended Fire Prevention Intensity: Low

Recommended Fire Suppression Strategy: Control

Fire Suppression Direction:

Control all wildfires at 5 acres or less.

Prescribed Fire Direction:

Prescribed fire has limited application in this allocation. Maintenance of total vegetation cover is critical to meeting resource objectives. Some burning of piled debris may be utilized.

Operational Constraints:

Avoid the use of ground disturbing equipment within 100 ft of water courses. Avoid the use of retardant within 200 ft of water courses. Firelines should be located away from stream courses. If possible maintain at least 50 ft between the stream course and firelines. Tactics which maintain the greatest proportion of riparian vegetation are preferred. Mop-up should be aggressive and directed at retaining as much riparian vegetation as possible.

Fuel Management Objectives:

Natural fuels shall be left in place for soil stability. Activity fuels shall be treated to (1) a level that results in a fire intensity of no more than Class 3 (Flame Length 4 to 6 Ft) when measured 3 years from creation under median summertime weather conditions or (2) meet specific resource need, whichever is lower.